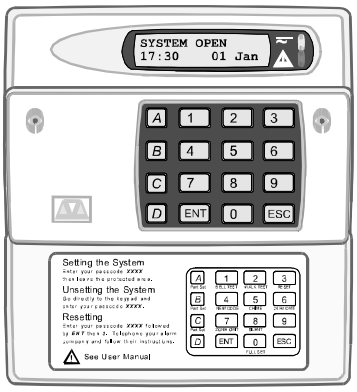
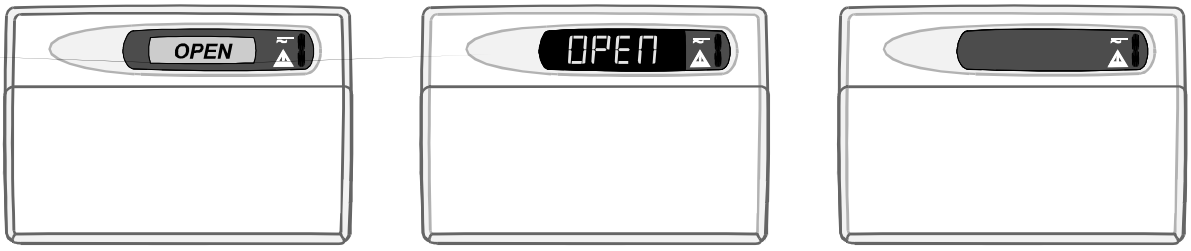
MENVIER SECURITY

TS790+ & TS900+

Intruder Alarm Control Panels



Networker



Installation and Programming Manual

COOPER Menvier

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Overview

Introduction

The TS790+ and TS900+ alarm control units are designed for medium to large installations. The TS900+ can handle from 10 to 56 zones, while the TS790+ can handle from 10 to 16 zones. Both systems can be remotely programmed or interrogated via the telephone line and a P.C.

Both systems can be broken down into 4 separately controlled areas (Wards) so that the premises or parts of the premises can be controlled independently.

The TS790+ and TS900+ are based on the TS790 and TS900, but also offer:

- Programmable pins for Plug-on STU or digicom.
- Backtamper and improved lid tamper.
- Improved text display for user when setting the system.

Control Panel

The control panel is the controlling unit for the system, it has a power supply and connections for a standby battery. It has the following facilities:

- 8 programmable detection circuits
- Bell and strobe outputs
- 4 programmable outputs (1 x Voltage free contacts and 3 high current transistorised)
- 8 programmable digicom/RedCARE outputs
- A connector for a plug-on Menvier digicom, digi-Modem, or STU
- Extension loudspeaker output
- All system program information and the 700 event log is stored in a removable non-volatile memory (NVM)

System Architecture

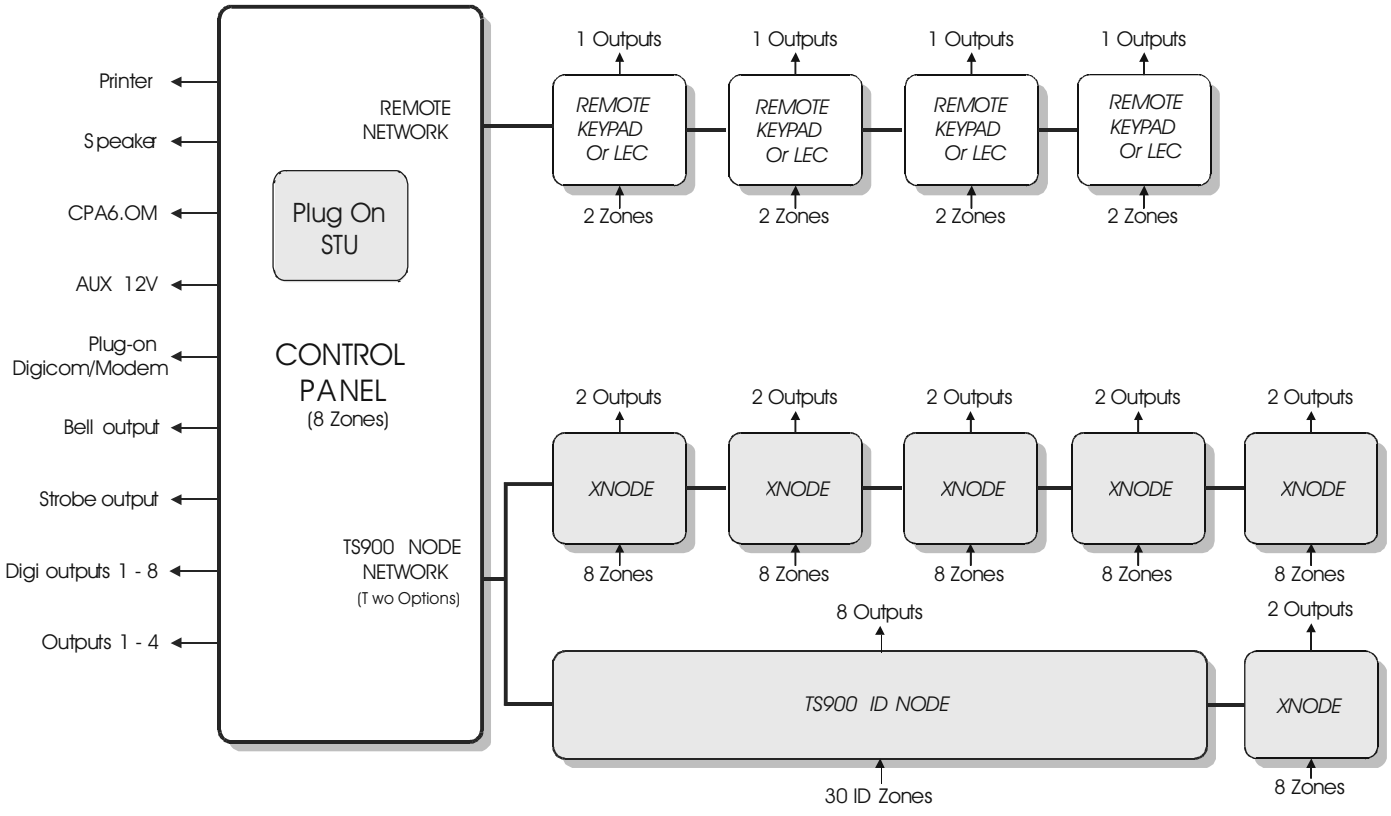


Figure 1. TS790+ and TS900+ Architecture

Remote Keypads

Up to 4 remote keypads can be connected to the control panel. Each remote keypad has two detection circuits and a single switched -ve output. There are four types of remote keypads that can be used:

32 Character LCD (NETLCD)

The NETLCD remote keypad has a backlit 32 character super-twist Liquid Crystal Display (LCD) and a backlit tactile rubber keypad. When using the LCD Keypads the text for user codes, part setting modes and circuit identification can be programmed to make the operation and programming of the system easier.

8 Character Starburst (NETSTAR)

The NETSTAR remote keypad has a backlit 8 character starburst display (LCD) and a backlit tactile rubber keypad.

4 Character LED (NETLED)

The NETLED remote keypad has a 4 character LED display and backlit tactile rubber keypad. When using the LED remote keypads, text cannot be programmed but all other system functions are available.

Remote Arming Station (NETARM)

The Remote Arming Station only allows setting and unsetting of the system. The unit has two indicator LEDs, the "Power LED" and a programmable "Function LED" (the "Function LED" may be programmed as "Fault" or "Area Set" etc.).

TSXNODE

The XNode provides eight programmable detection circuits and two programmable outputs (one switched +ve and one switched -ve). Use the XNode to replace the TS900 Node where necessary. (Do not use on the TS790+.)

TS900 NODE (Obsolete)

The TS900 Node provides eight programmable detection circuits and two programmable outputs. (Do not use on the TS790+.)

ID Node (TS900 IDNODE)

The TS900 IDNode can be used as an alternative to the standard XNode. It provides a single ID Detector Loop for connection to 30 ID devices and 8 programmable outputs. Several configuration options allow it to be used on its own or with existing XNodes. You can also connect two IDNodes to give a total of 40 zones. (Do not use on the TS790+.)

TS700 LEC

The Local Expansion Card (LEC) provides two programmable detection circuits and one programmable output.

Specifications

General

Zones	TS790+ - 10 to 16 TS900+ - 10 to 56
Expansion	2 zone LECs and/or Keypads 6 zone LEC 8 zone XNodes (not on TS790+) 30 zone ID Node (not on TS790+) (Two IDNodes give up to 40 zones total.)
Outputs (Panel)	12 + 8 via plug-on digicom
Keypad types	32 Character LCD 8 Character Starburst LCD 4 Character 7-segment LED LED Arming station

Electrical

Mains Input	230+/-10% 50Hz+/-5%
Control Panel	220mA (normal) 300mA (alarm)
Battery	12V 7Ah Sealed Lead Acid
Power Supply	1.5A
LCD keypad	120mA (normal) 130mA (alarm)
Starburst keypad	120mA (normal) 130mA (alarm)
LED keypad	120mA (normal) 140mA (alarm)
Arming Station	30mA (normal) 40mA (alarm)
XNode	60mA (normal) 60mA (alarm)
TS900 Node	60mA (normal) 60mA (alarm)
ID Node	80mA (with 1 device) 160mA (with 30 devices)
TS700 LEC	30mA (normal) 30mA (alarm)

Physical

Control panel	384(W) x 312(H) x 95(D)mm 4.9Kg
Remote Keypads	150(W) x 104(H) x 30(D) mm 282g
Nodes (all types)	128(W) x 182(H) x 34(D) mm 370g
TS700 LEC	142(W) x 82(H) x 36(D) mm 213g
Environment	-10 to +55 degrees C

System Installation

Cable Routing

When installing cables, the following should be noted:

- *Screened cable may prove necessary if the Network is run adjacent to cables that produce R.F. or are switching high current loads, e.g., mains, telephone, computer.*
- *Ensure that all Network and detection circuit cables are kept clear of mains supply cables, telephone cables, R.F. cables and cables supplying bells or sounders.*
- *Mains power supply cables to the system must be connected to an un-switched fused spur that cannot be accidentally switched off, and must enter the housing via its own cable entry point.*
- *In larger installations it may prove necessary to fit remote power supplies to overcome excessive voltage drops in the cable runs. It is recommended that the Menvier 519XB is used in these instances as it can be fault monitored by the control panel.*

Node Network Wiring (TS900+ Only)

XNodes require a 4 core cable for interconnection, and may be connected in a "daisy-chain" or "star" configuration. The distance between each XNode must not exceed 100 metres. The Aux +/- terminals provide power for detectors. On installations that utilise the XNode outputs to drive sounders and strobes it may be necessary to fit a remote power supply (Figure 2) to prevent over loading of the control panel power supply.

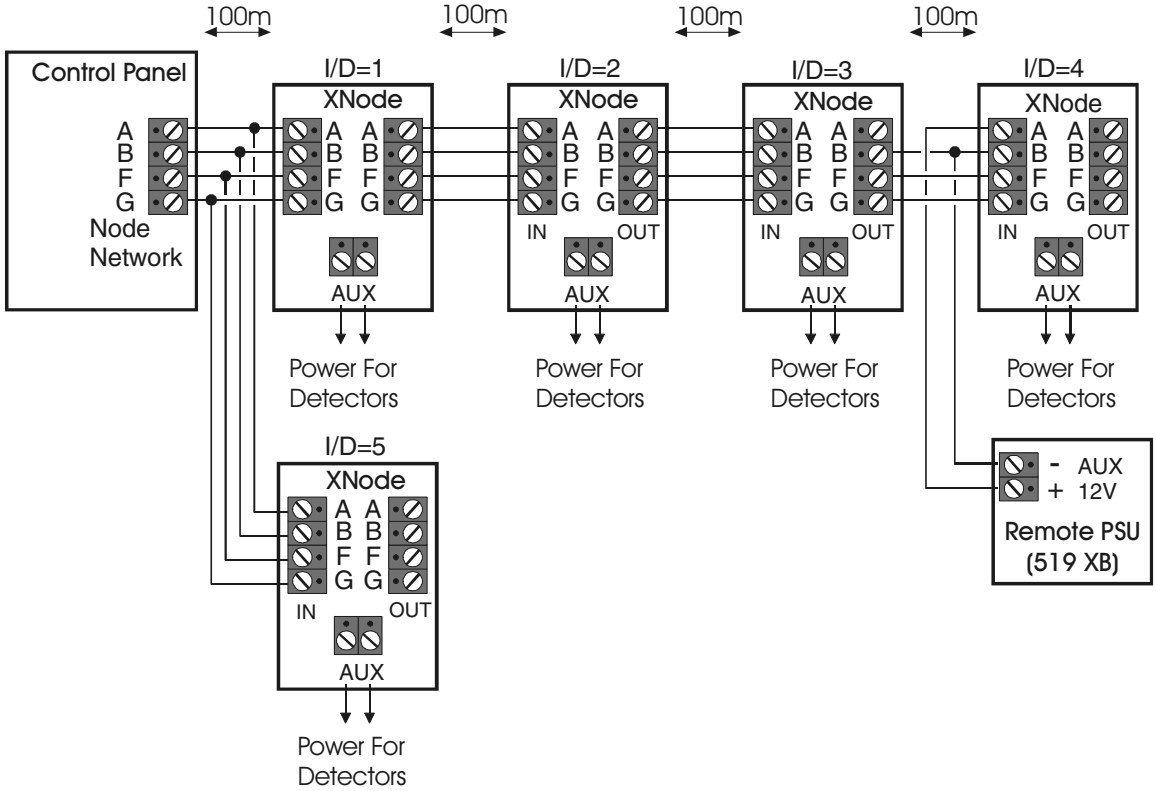


Figure 2. TS900 Node Network Wiring

Remote Network Wiring

Devices on the "Remote Network" require a 6 core cable for interconnection, and may be connected in a "star" or "daisy-chain" configuration. The distance to the furthest device from the control panel must not exceed 100 metres. Power for detectors are provided by the A and B terminals (Figure 3).

Combined Network Wiring (TS900+)

On some installations it may be desirable to have a remote keypad connected after the XNodes. This can be achieved by using an eight core cable from the control panel and connector strips within the XNode and remote keypads (Figure 4).

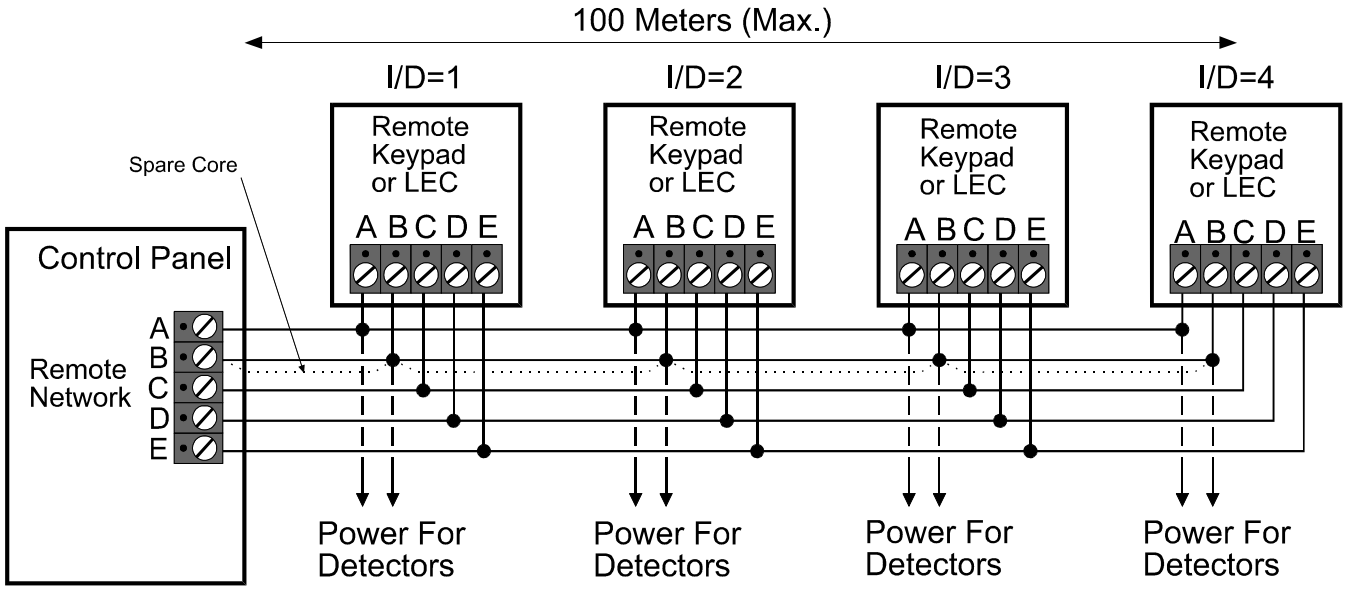


Figure 3. TS790+ & TS900+ Remote Network wiring

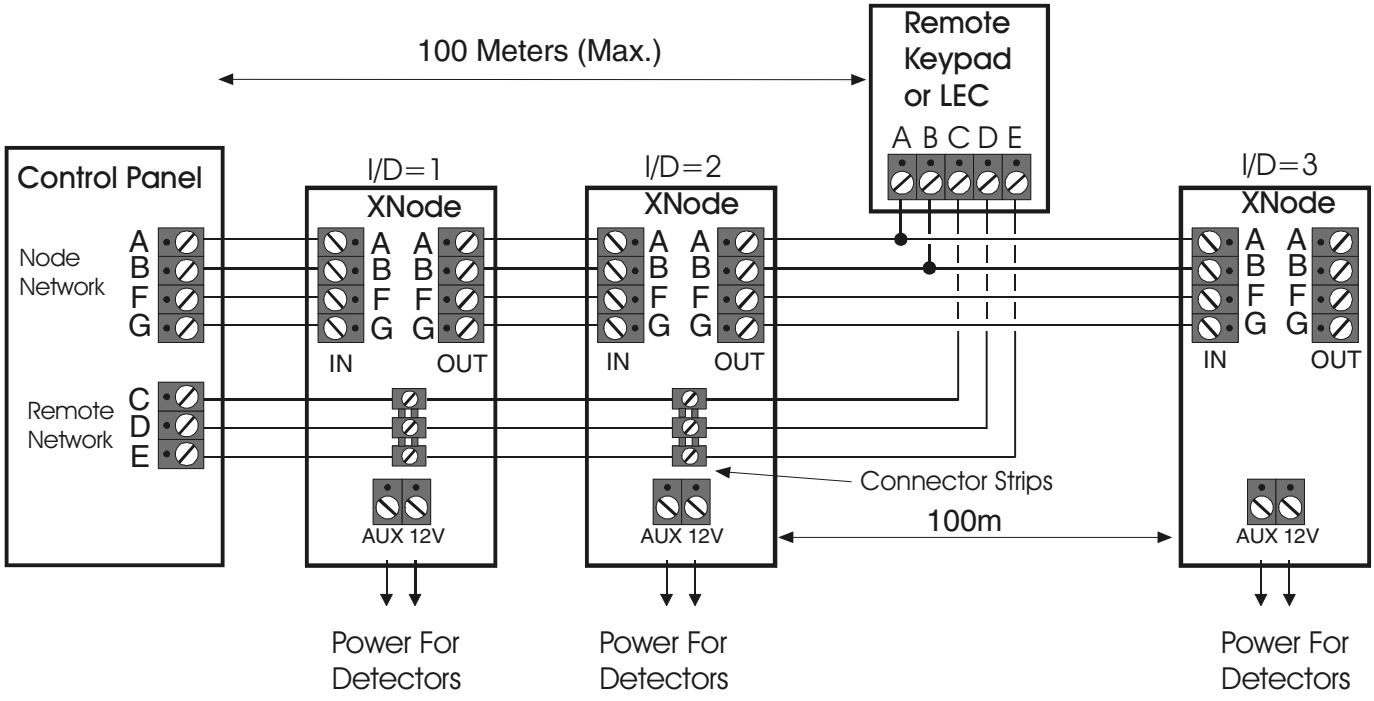


Figure 4. TS900+ Combined Network Wiring

Control Panel Installation

Proceed as follows:

1. Open the control panel by removing the three screws from the front cover. Remove the cover by sliding it up slightly to disengage the bottom clip.
2 Note the position of the cable entries as follows:
   (a) Ten 20mm cable entries for detection, alarm and remote keypad cables.
   (b) A 20mm cable entry for mains (240V) below the mains input terminal block.

   ♦ ***The mains cable must enter the control panel through its own cable entry and must not be mixed with other cables.***

3. Hold the control panel back box in the required position (keyhole to the top) and mark the centre of the keyhole position. Remove the back box, drill and plug the hole.
4. Screw a No 10 screw into the plugged hole. Re-position the back box and mark the remaining two securing holes. Remove the back box, drill and plug the holes.
5. Re-position the back box and pass all cables into the base via the appropriate cable entries, remembering to fit grommets where necessary.
6. Secure the back box using not less than 30mm x No 10 screws through the three securing holes.
7. If required install and connect the following:
   (a) Digicom or RedCARE STU.
   (b) Plug-on digicom type DC54, DC58 DC58M.
   (c) Output modules type CPA6.OM.
   (d) Printer type DATAC or serial RS232 via a printer adapter (MPA/DCI).
   (e) Relay module type RM.3A.

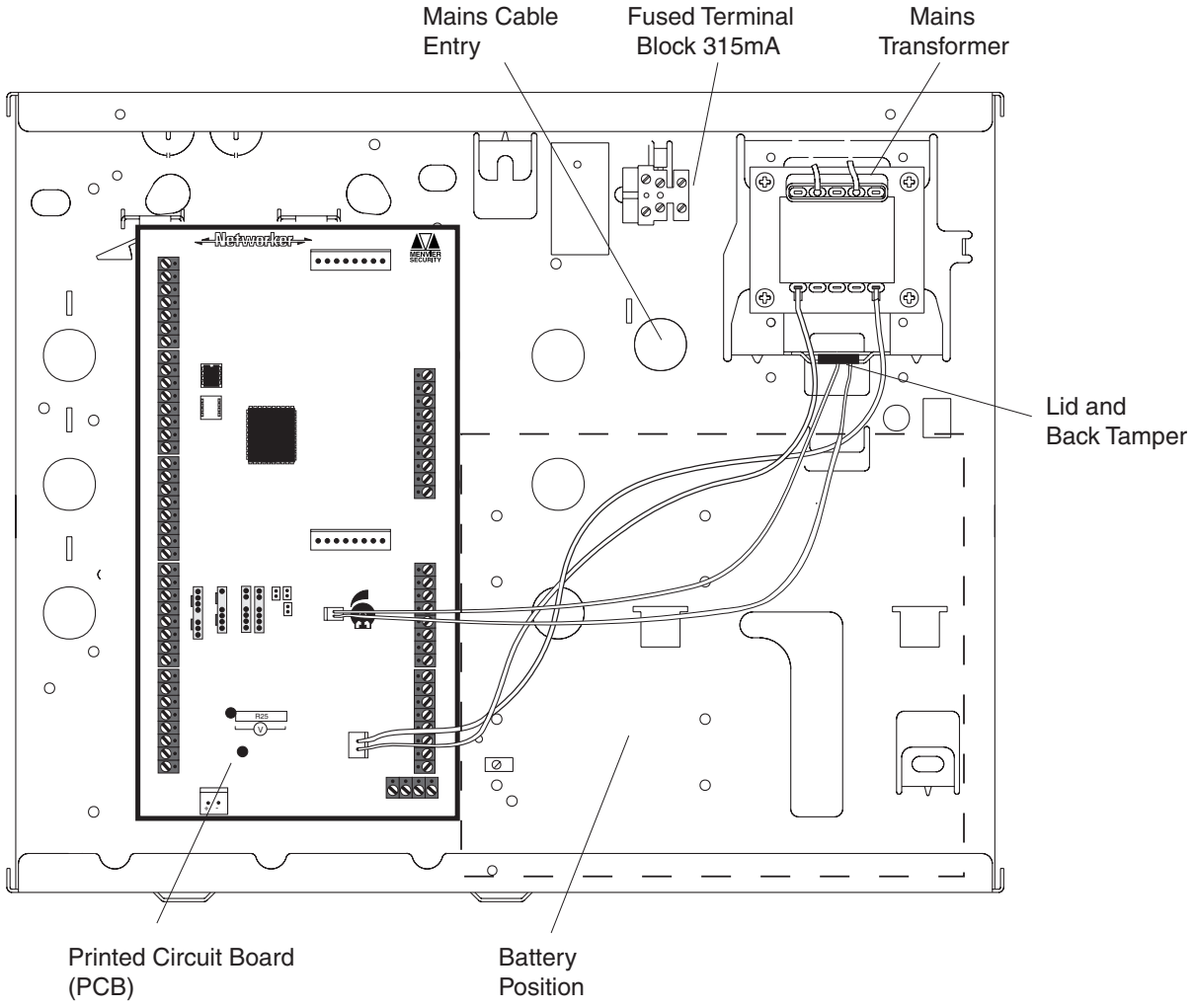


Figure 5. TS790+ & TS900+ Control Panel Layout

Control Panel PCB Layout

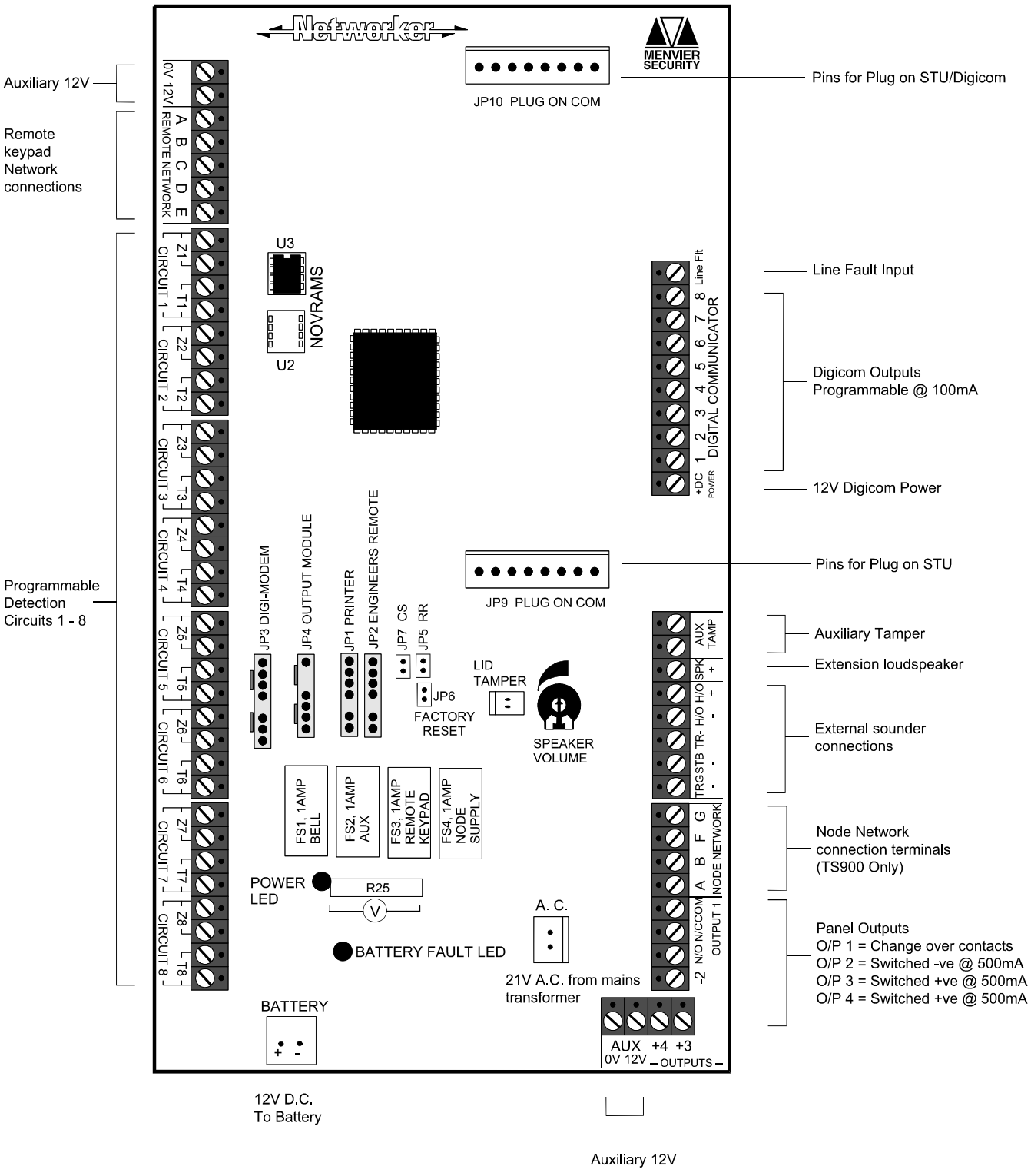


Figure 6. TS790+ & TS900+ Main PCB

Connection Terminals & Indicators

The main PCB has the following "Jumper Plugs" (JP) and indicator LEDS:

JP1 PRINTER
This 6-pin plug is used for connecting to either a CPA6.P printer or a standard RS232 printer via the MPA printer adaptor.

JP2 ENGINEERS REMOTE
An Engineers remote keypad may be temporally connected to this 6-pin plug to allow programming and testing to be carried out at the control panel.

♦ *DO NOT plug the Engineer's keypad into JP1, or the printer into JP2. If you do damage will occur.*

JP3 DIGI-MODEM
A plug-on digicom or digi-Modem may be connected to this 7-pin plug to allow panel alarm information to be transferred to a central station. The digi-Modem is used for remote communication and programming via a P.C. The PCI lead also connects to this plug when using the P.C. for direct communication with the control panel.

JP4 OUTPUT MODULE
Output Modules type CPA6.OM may be connected to this 5-pin plug, and are used to provide switched -ve outputs to LEDs/relays etc. The outputs may be programmed such that they will mimic circuit activations or activate only when a circuit causes an alarm condition.

JP5 RR
If the panel is programmed as "Engineer Reset", shorting the "Remote Reset" (RR) pins after an alarm condition will cause the panel to reset. These pins could be connected to the "Control" output on a RedCARE STU so that the central station may provide a "Remote Reset" facility. Note: Fit a jumper to JP7 CS to use JP5 without RedCARE.

JP6 FACTORY RESET
If these pins are shorted during power-up all system parameters are reset to their factory default settings. If the engineer's passcode is lost or forgotten it can be reset to 1234 without loosing any other program data. The procedure for resetting the engineer's passcode is described on page 55.

JP7 CS
Before fitting a plug-on STU, the "CS" link at JP7 *MUST* be removed to ensure correct operation of Remote Reset via RedCARE.

JP8 Lid Tamper
JP8 is connected to the tamper switch assembly to provide lid tamper and back tamper.

JP9&10
Pins for plug-on STU/Digicom.

VR1 SPEAKER VOLUME
When an extension loudspeaker is connected to the control panel terminals the volume of the advisory tones may be adjusted using this control.

♦ *Alarm tones are always at full volume.*

U2/3 NOVRAMS
A removable non-volatile memory (NVM) device that stores all system program parameters and the 700 log events. The event log can be expanded to 1800 events when the second NVM(U2) is fitted. Order code PP5.MEMKIT (5 x NVMs).

LED1 POWER ON
This LED indicates that the system power (mains or battery) is healthy.

LED2 BATTERY FAULT
If the system battery is incorrectly connected to the control panel or the battery voltage level is below 4 Volts then the "Battery Fault" LED will illuminate. The fault LED will only extinguish when the battery has been correctly connected or replaced.

V SYSTEM CURRENT CONSUMPTION
To calculate system current consumption, use a Voltmeter set to a low Voltage range and measure the Voltage across the test point. Multiply the reading by 10 to give the Total system current consumption. For example, a reading of 70mV = 700mA.

Mains Connection

The mains supply is connected to a 3 way "Euro Type" fused terminal block, which is fitted with a 315mA fuse. All electrical connections should be carried out by a qualified electrician and must comply with the current IEE regulations.

- *To comply with european regulations the supply should be fed from a readily accessible disconnect device, e.g. un-switched fused spur fitted.*
- *When making mains connections it should be ensured that if the cable slips in such a way as to place a strain on the conductors, the protective earthing conductor will be the last to take the strain.*

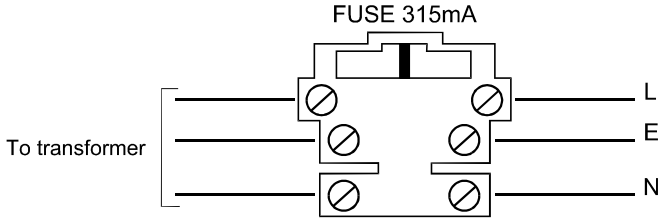


Figure 7. Mains Suppy Connections

Battery Connection

A 7Ah battery must be fitted to the system to allow it to function during a mains fail condition. The TS790+/TS900+ is equipped with a "Battery Protection" circuit so that if a battery is accidentally reverse connected or its voltage is below 11V, the "Battery Fault" LED illuminates. To clear the fault simply reconnect or replace the battery as appropriate.

Remote Keypads

Four types of remote keypads can be used on the system, however, only the NETLCD remote keypad can be used for programming text information. Any combination of remote keypad may be used on the same system if desired.

NETLCD Remote Keypad

The NETLCD remote keypad has a 32 character backlit Liquid Crystal Display (LCD)

NETSTAR Remote Keypad

The NETSTAR remote keypad has a 8 character backlit Starburst Liquid Crystal Display (LCD).

NETLED Remote Keypad

The NETLED remote keypad has a 4 character LED display.

NETARM Remote Arming Station

The NETARM remote arming station does not have a display, therefore it is designed to only be used where setting, part setting and unsetting of the system is required.

PCB Layouts & Connections

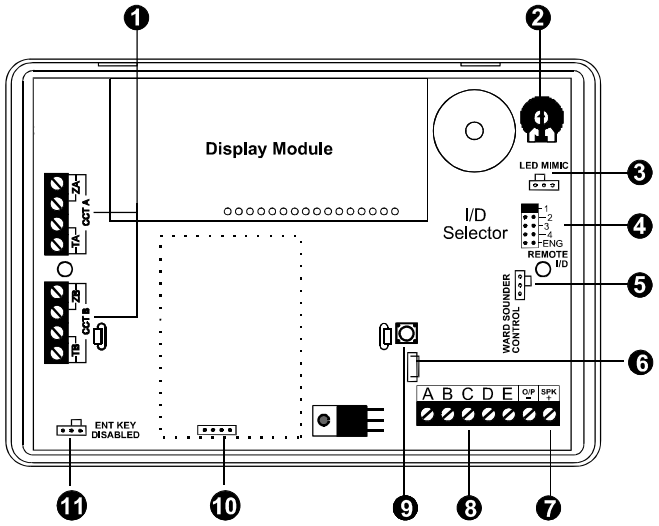


Figure 8. NETLCD, NETLED & NETARM PCB Layout

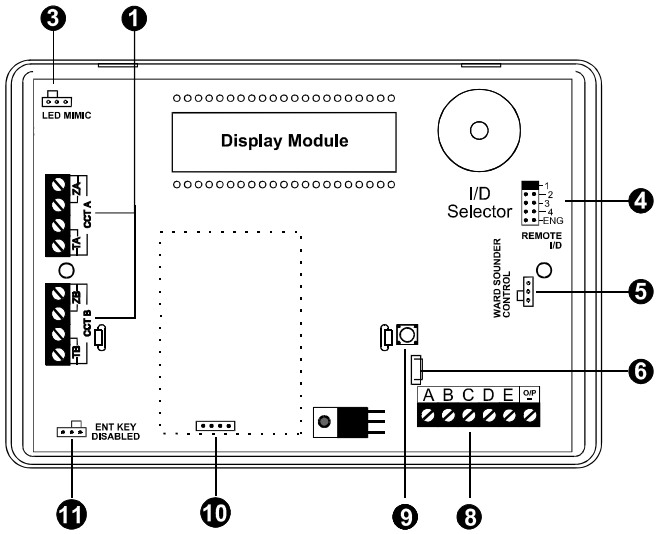


Figure 9. NETSTAR PCB Layout

1 **Detection Circuits.**
Each remote keypad has two programmable detection circuits.

2 **Loudspeaker Volume.**
For adjusting the volume of a speaker wired to the remote keypad (NETLCD only).

3 LED Mimic.
If this jumper link is set to the "enabled" position, the red (⚠) LED on the keypad will be "ON" when the keypad output is active.

4 Remote I/D.
Used to select the remote keypads address. (ENG = Engineer).

5 Ward Sounder Control.
If this jumper link is set to the "disabled" position, the remote keypad sounder will follow the control panel speaker output. If this link is set to "enabled", the remote keypad sounder will only activate when the panel speaker and the output on the remote keypad are active at the same time.

6 Keys 1 and 3 PA Enable
Leave this link intact to enable PA alarm on keys 1 and 3. When a user presses 1 and 3 together the control panel sounds a PA alarm. Cutting the link ensures that when a user presses keys 1 and 3, the control panel reports an alarm from zone A on the keypad. The alarm type will depend on how the zone types is programmed in the control panel.

7 Loudspeaker Output.
This terminal can be connected to a single 16 Ω Loudspeaker (NETLCD only).

8 Network Connections & O/P.
Terminals A to E are used to connect the remote keypad to the control panel network. The O/P terminal is the programmable output.

9 Tamper Switch.
Remote Keypad case tamper

10 Proximity Reader Option.
Pins for plugging on a TSNETPROX PR1 proximity reader module.

11 ENT Key Disable.
If the "ENT" key is enabled the remote keypad can be used to set/unset and access all user menus. If the "ENT" key is disabled the remote keypad can only be used to set and unset the system. (Not fitted on NETLCD.)

Installation Procedure.

- *Always ensure that all power (mains and battery) is removed before making any connections to the remote keypad.*

1. Separate the cover and base by using a screwdriver to push 2 of the clips (top or bottom) inward from the base indents, then lift the cover assembly, noting that the PCB is fixed to the under side of the cover.
2. Hold the base in position (keyhole to the top) and mark the three securing holes, drill and plug the wall as required. Pass all the cables into the base via the cable entry points as appropriate and secure the base to the wall.
3. Connect "Remote Network" and detection circuit cables to the appropriate terminals, *see Figure 8*.
4. Set the I/D selector jumper link to the required position:

I/D Selector	Circuit A	Circuit B	Panel Output
1	09	10	5
2	11	12	6
3	13	14	7
4	15	16	8
ENG/NULL	N/A	N/A	N/A

   No two remote keypads or LECs should have the same I/D.

   If the I/D is set to "ENG" the remote keypad will function as an Engineer's keypad allowing it to be plugged onto the control panel so that system programming and testing may be carried out (*see Engineer's Keypad*).

5. If the remote keypad has a "ENT" key enabled/disable link it can be used to limit the functionality of the remote keypad. If the "ENT" key is enabled the remote keypad can be used to set/unset and access all user menus. If the "ENT" key is disabled the remote keypad can only be used to set and unset the system.
6. If the remote keypad has a "Ward Sounder Control" link it can be used to make the remote keypad sounder follow the programmable output. When the link is set to the disabled position the sounder responds

as normal. When the link is set to the enabled position the sounder is only enabled when the remote keypad programmable output is active. For example, to make the keypad ward respective for ward A, program the output on the remote keypad to "Sounder Control A" (type 064) and set the "Ward Sounder Control" link to the enabled position. (Hint: use Engineer Menu 1 option 1. Panel o/p 5 = keypad o/p 1, panel o/p = keypad o/p 2 and so on.)

7. Finally clip the remote keypad cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

Engineer's Keypad

Normally all system programming will be carried out from one of the installed remote keypads, however sometimes it may be more convenient to program the system at the control panel. This can be achieved by using an "Engineers Keypad" which is temporarily plugged on to the control panel (JP2).

- *DO NOT plug the Engineer's Keypad into JP1 or you may damage the equipment.*

To convert a standard remote keypad to an "Engineers Keypad" an Engineer's interface lead is required which can be obtained from your supplier (P/No. NETEKI).

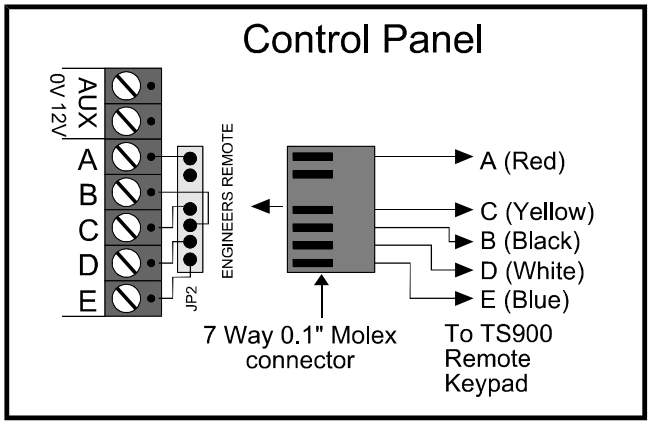


Figure 10. Engineer's Keypad Connections

XNode (TS900+)

The XNode is very similar to the TS900 Node in that it provides the facility to add an extra eight programmable detection circuits and two programmable outputs. The maximum number of XNodes that can be connected to any one network is 5.

XNode Wiring

The XNode requires a 4 core cable for interconnection, and up to 5 may be connected in a "daisy-chain" or "star" configuration. The distance between each XNode must not exceed 100 metres. The total distance to last XNode must not exceed 500 metres. The Aux. +/- terminals provide power for the detectors.

Programmable Outputs on the XNode

The XNode has two programmable outputs, each rated at 100mA, output [A+] is a switched +ve output and output [B-] is a switched -ve. The outputs can be used to drive sounders or relays etc.

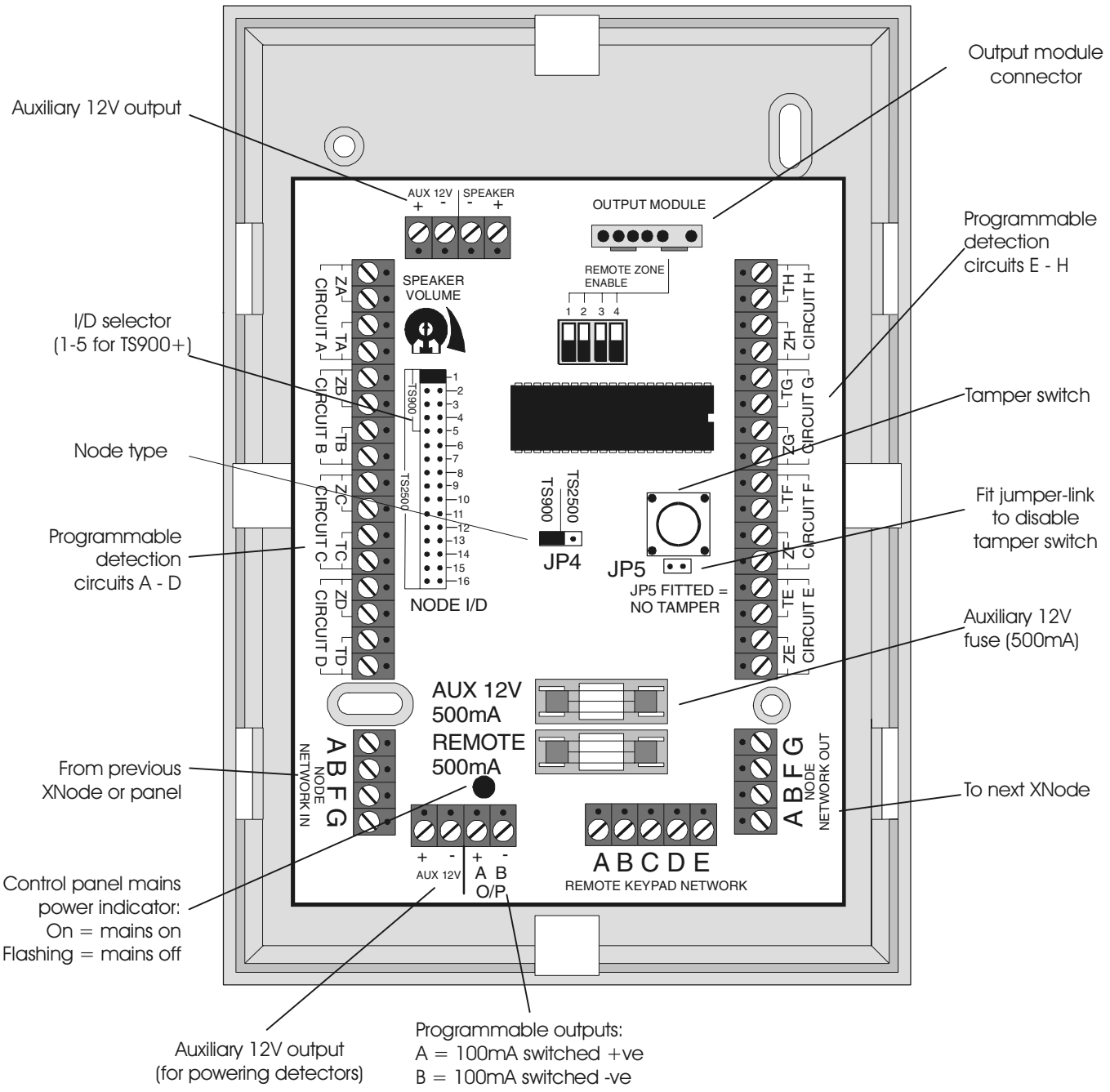


Figure 11. Xnode Layout

Installing an XNode

1. Separate the cover and base by using a screwdriver to push 2 of the clips (left or right) inward from the base indents, then lift the cover clear.
2. If the XNode is being fitted inside the control panel you may remove the XNode PCB from its base and secure it to the base of the control panel using self adhesive feet. If required, the tamper switch can be disabled by fitting the jumper link across JP5, *see Figure 11.*
3. If the XNode is being fitted outside the control panel, hold the base in position and mark the four securing holes. Drill and plug the wall as required, then pass all cables into the base via the cable entry points as appropriate. Secure the base to the wall using the appropriate fixing screws.
4. Connect the network data cables to the appropriate terminals.
5. Set the I/D selector jumper link to the required position, see the table below, ensuring no two XNodes have the same I/D.

		XNode I/D				
		1	2	3	4	5
CIRCUITS	A	17	25	33	41	49
	B	18	26	34	42	50
	C	19	27	35	43	51
	D	20	28	36	44	52
	E	21	29	37	45	53
	F	22	30	38	46	54
	G	23	31	39	47	55
	H	24	32	40	48	56
OPs	+A	1	3	5	7	9
	-B	2	4	6	8	0

6. Set JP4 to the TS900 position.
7. Finally clip the XNode cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

TS900 Node Installation (TS900+ Only)

The TS900 Node is now obsolete, and has been replaced by the TSXNode. The TS900 Node allowed you to add an extra eight programmable detection circuits and two programmable outputs. The Nodes are connected on the "Node Network" and up to five may be connected to the TS900+ system.

- *Always ensure that all power (mains and battery) is removed before making any connections to the Node.*

Figure 12 shows the connections for the "Node Network" cables and detection circuit cables.

Set the I/D selector jumper link to the required position. The Node ID table shown for the XNode shows the positions for the jumper.

No two NODES should have the same I/D.

The NODE I/D selector DOES NOT have to be set sequentially but it is advisable so as to aid fault finding and programming.

TS900 Node Layout (Obsolete)

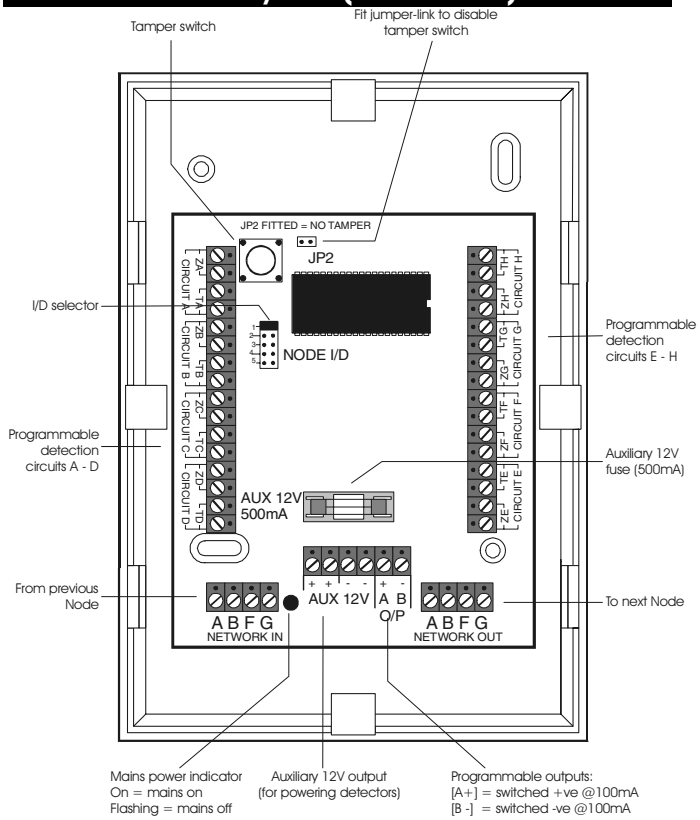

Tamper switch
Fit jumper-link to disable tamper switch
JP2 FITTED = NO TAMPER
JP2
I/D selector
NODE I/D
Programmable detection circuits E - H
Programmable detection circuits A - D
Auxiliary 12V fuse (500mA)
AUX 12V 500mA
From previous Node
AUX 12V
A B O/P
To next Node
A B F G NETWORK IN
A B F G NETWORK OUT
Mains power indicator On = mains on Flashing = mains off
Auxiliary 12V output (for powering detectors)
Programmable outputs: [A+] = switched +ve @100mA [B -] = switched -ve @100mA

Figure 12. TS900 Node Layout

TS700 LEC Installation

The TS700 LEC (Local Expansion Card) is connected to the "Remote Network" and provides two additional programmable detection circuits and a programmable output. The "Remote Network" may have up to three LECs connected, as the system will always require at least one remote keypad.

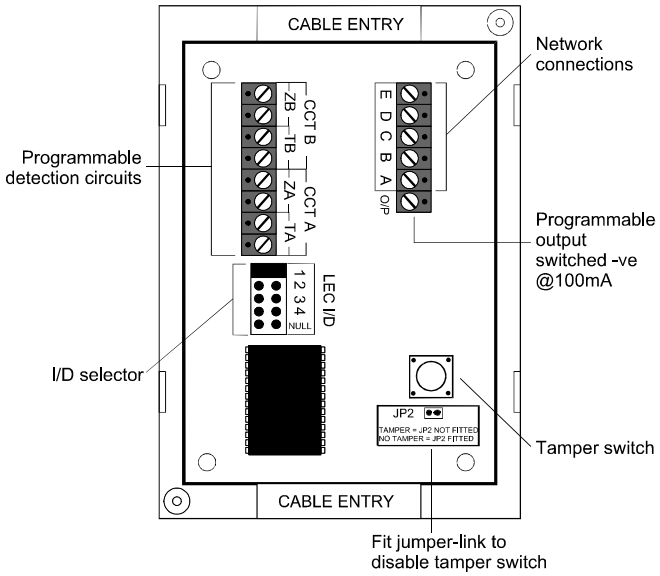


Figure 13. TS700 LEC Layout

✦ *Always ensure that all power (mains and battery) is removed before making any connections to the LEC.*

1. Remove the cover from the base and carefully remove the PCB.
2. If the LEC is being fitted inside the control panel you may remove the LEC PCB from its base and secure it to base of the control panel using self adhesive feet. If required, the tamper switch may also be disabled by fitting the jumper link across JP2, *see Figure 13*.
3. If the LEC is being fitted outside the control panel, hold the base in position and mark the two securing holes. Drill and plug the wall, then pass all cables into the base via the cable entry points. Secure the base to the wall using the appropriate fixing screws.
4. Connect "Remote Network" cables and detection circuit cables to the appropriate terminals, *see Figure 13*.
5. Set the I/D selector jumper link to the required position:

I/D Selector	Circuit A	Circuit B	Panel Output
1	09	10	5
2	11	12	6
3	13	14	7
4	15	16	8
NULL	N/A	N/A	N/A

   No two LECs or remote keypads should have the same I/D.

   DO NOT set the I/D selector to the "NULL" position.

6. Finally clip the LEC cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

Wiring Detection Circuits

All detection circuits may be wired as "End Of Line" (EOL) or "Double Pole" (DP). Both methods can be used on the same equipment.

Double Pole

The DP method requires the following:

The detector alarm and tamper contacts are connected to the zone and tamper terminals respectively.

The combined alarm and tamper loop resistance must be less than 100 Ohms.

The maximum number of detection devices allowed in a circuit is ten.

Normally open devices such as pressure pads and exit terminator buttons are connected between the zone and tamper terminals.

If the detection circuit is not used links can be fitted across the zone and tamper loops or programmed as Not Used.

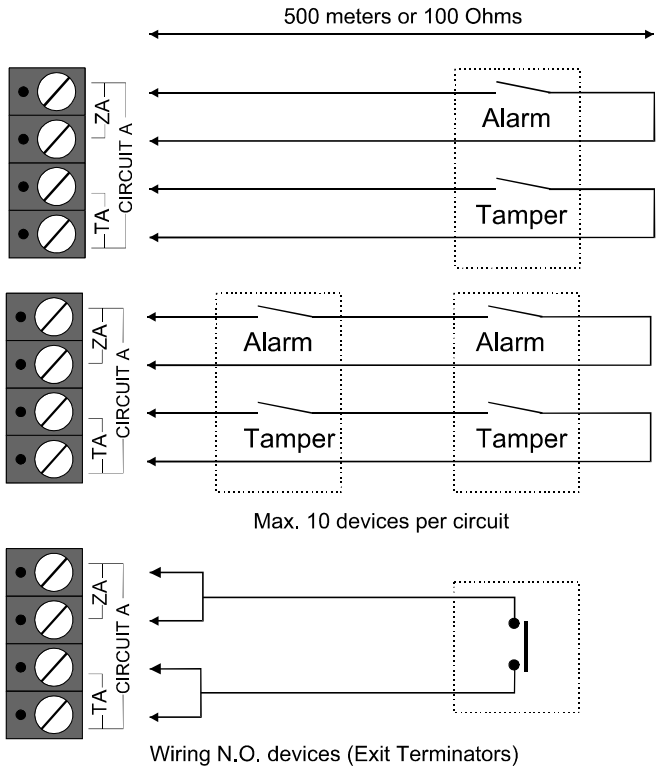


Figure 14. Double Pole Wiring

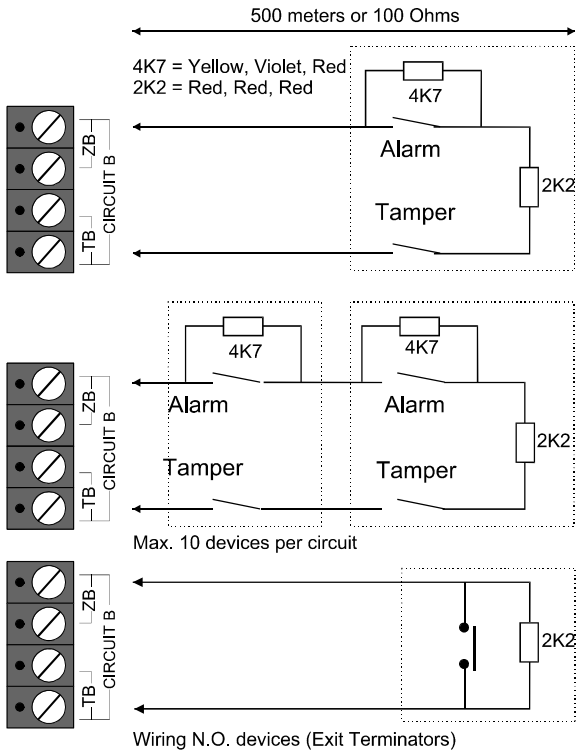


Figure 15. End of Line Wiring

End Of Line

The EOL method requires the following:

The detector alarm contacts must have a 4K7 shunt resistor fitted.

A 2K2 End of Line (EOL) resistor must be fitted at the point in the circuit furthest from the control panel.

Loop resistance with the EOL resistor shorted must be less than 100 Ohms.

The maximum number of detection devices allowed in a circuit is ten.

Normally open devices such as pressure pads and exit terminator buttons are connected across outer terminals

If the detection circuit is not used links can be fitted across the zone and tamper loops or programmed as Not Used.

External Sounder Connections

The following terminals have been provided to allow connections to an external sounder:

H/O - This is used to provide a permanent -ve hold off to external sounders, strobes etc.

H/O + This is used to provide a permanent +ve hold off to external sounders, strobes etc. It is protected by a 1 Amp fuse (Bell 12V).

TR - This is the negative tamper return connection from the siren or bell.

STB - This is the strobe output which will switch to 0V on alarm and is rated at 500mA. Connect the other side of the strobe to the H/O +.

TRG - This is the bell trigger output which will switch to 0V on alarm and is rated at 500mA. This output can be programmed for SAB or SCB operation, as follows:

SAB: TRG - will switch to 0V on alarm and will provide a maximum of 500mA.

SCB: TRG - will provide a negative hold off (500mA), which is removed on alarm.

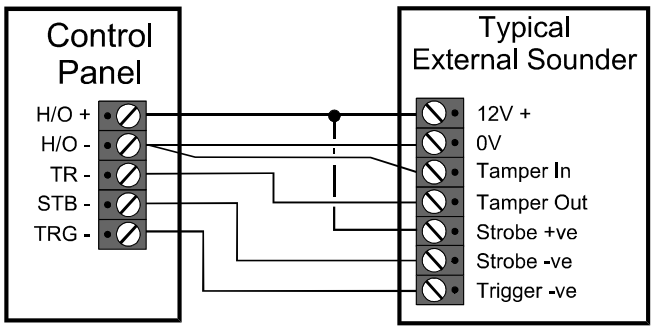


Figure 16. External Sounder Connections

Installing an External Sounder from a XNode

The XNode has two programmable outputs, these can be utilised to drive an external sounder. However, it is recommended that a remote power supply is fitted next to the XNode in order to provide sufficient power for the external sounder. A relay module such as the Menvier RM3A is also required to drive the external sounder. Figure 17 shows the connection details.

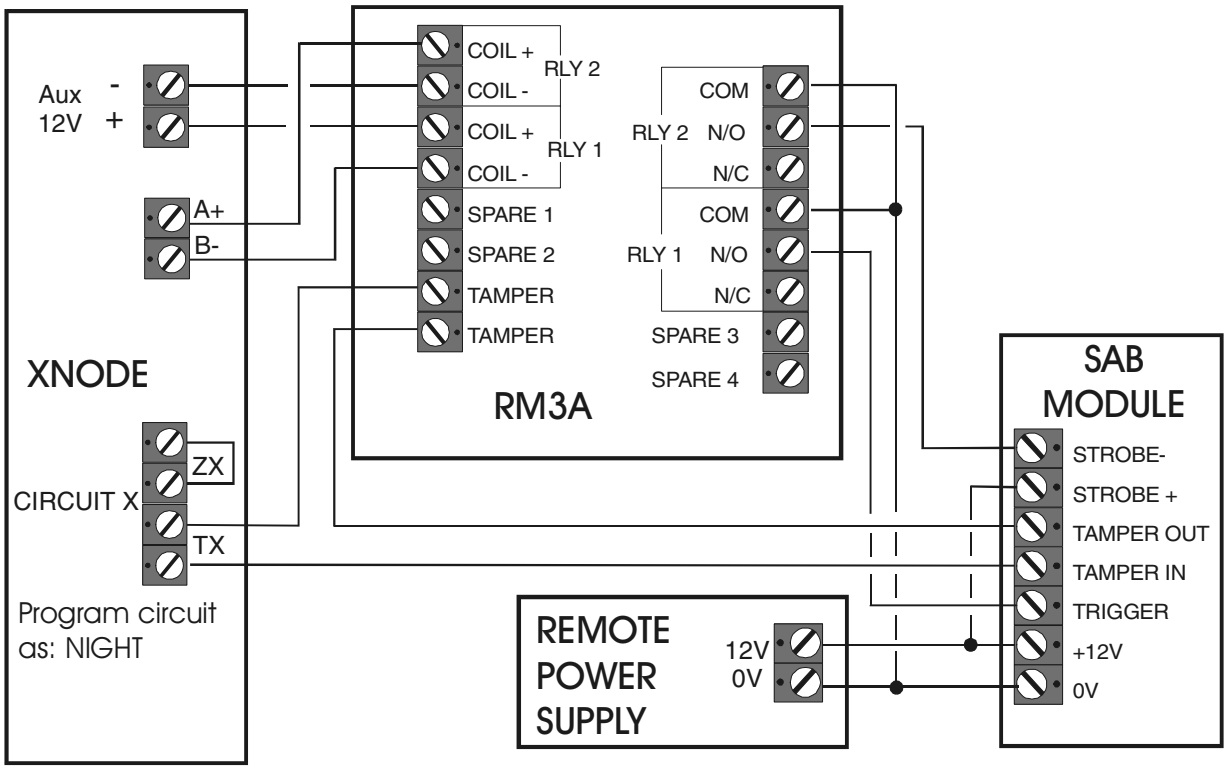


Figure 17. External Sounders Connection -

Auxiliary Tamper

These two terminals provide tamper protection to auxiliary devices such as power supplies, extension loudspeakers etc. If they are not used they must be linked out.

Extension Loudspeakers

Up to two extension loudspeakers can be connected across the [SPK+] and [H/O-] terminals on the control panel PCB. The volume for the loudspeaker is controlled by VR1 "Speaker Volume".

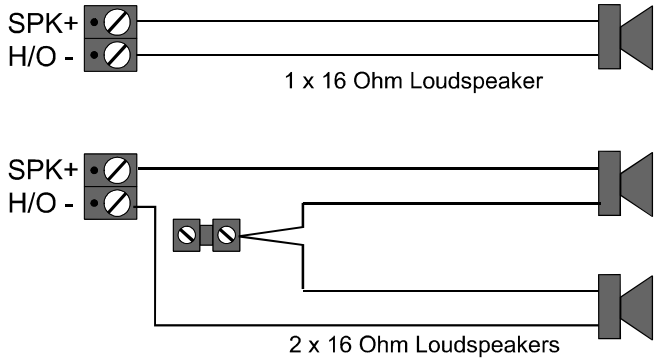


Figure 18. Loudspeaker Connections

Digicom/RedCARE Installation

Connect a digital communicator, RedCARE STU or Paknet interface card to the control panel using the following connections:

Digicom Outputs 1 to 8

These are the programmable digicom output connections. They are normally at +12V and switch to 0V when active. The outputs can be inverted so that they switch from 0V to +12V when active *(see System Configuration on page 34)*. Each output will source 5mA in the +12V condition and sink 100mA in the 0V condition.

Alternatively, fit a plug-on STU to JP9 and JP10. This uses Digicom outputs 1 to 7 for Channels 1 to 7. Note that Channel 8 on this interface is dedicated to "Low Battery". You *MUST* remove the "CS" link at JP7 before fitting a plug-on STU to ensure correct operation of Remote Reset via RedCARE.

+DC POWER

This provides the +12V power to the digicom. This output is un-fused and therefore should only be used if the digicom is fitted inside the control panel. Use any of the auxiliary 0V terminals for the 0V supply for the digicom/STU.

LINE FLT

If an external device switches this input to +12V, the control unit generates a "Line Fault". If a "Line Fault" occurs while the system is unset then the control unit generates a "Chime"every minute. If a "Line Fault" occurs while the system is set then the control unit cancels the "Bell Delay".

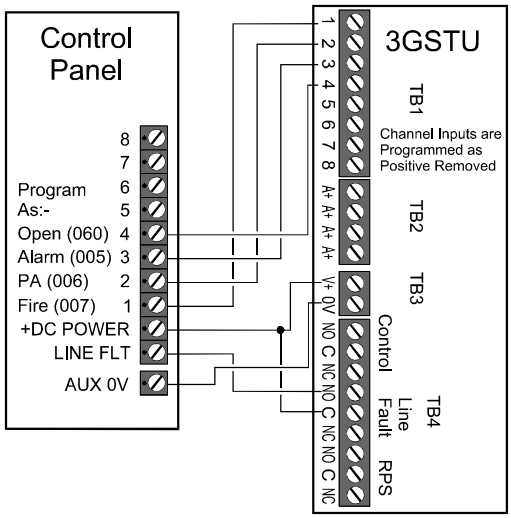


Figure 19. 3GSTU RedCARE Connections

Plug-on Digicom Installation

A plug-on digital communicator DC54 or DC58 may be fitted inside the control panel to allow alarm status information to be transferred to a dedicated central station. The unit should be fitted in accordance with the installation instructions supplied with it and connected to the control panel plug DIGI-MODEM (JP3) using the lead provided with the unit, *see Figure 20*. The NVM within the digicom can either be programmed via the control panel, *see page 52.* or directly using an engineer's keypad plugged into the digimodem.

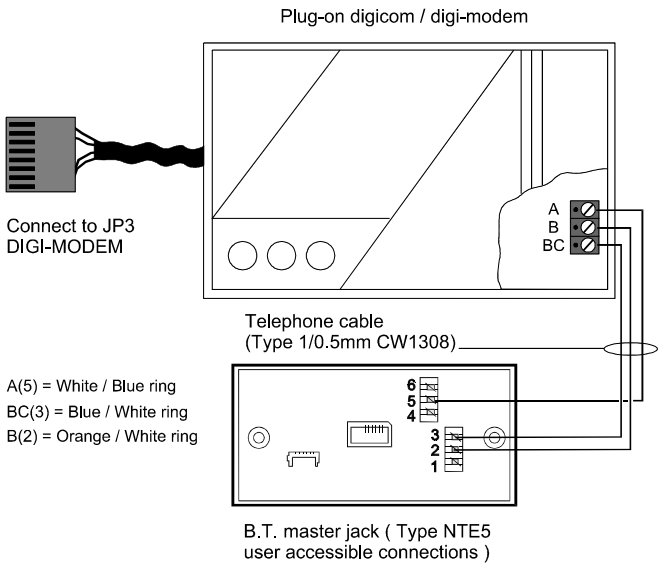


Figure 20. DC54/DC58 Connections

Plug-on digi-Modem Installation

A plug-on digi-modem DC58M may be fitted inside the control panel to allow remote interrogation and programming via a personal computer (PC). It will also function as a standard digicom (if required). The unit should be fitted in accordance with the installation instructions supplied with it and connected to the control panel plug DIGI-MODEM using the lead provided with the DC58M. The NVM within the digi-modem can either be programmed via the control panel, *(see page 52).*or by using an engineer's keypad plugged into the digi-modem. The modem data is also programmed via the control panel.

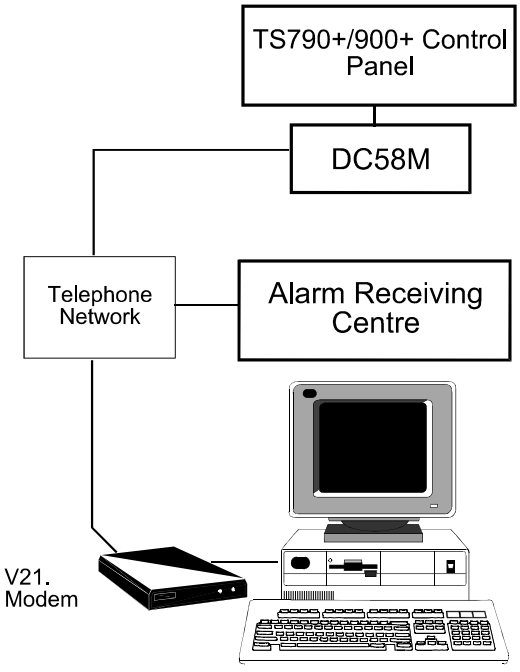


Figure 21. DC58M Digi-modem Schematic

Output Modules Installation (CPA6.OM)

Output Modules (CPA6.OM) can be used to provide a set of outputs to LEDs or relays to indicate either circuit alarm activations or circuit mimic activations. The first output module connected to the system will indicate circuits 1 to 8, the next modules will indicate circuits 9 to 16 etc. Output modules are normally fitted inside the equipment they are controlling and may be positioned up to 100 metres away from the main panel. The output module should be used and connected in accordance with the instructions provided with it.

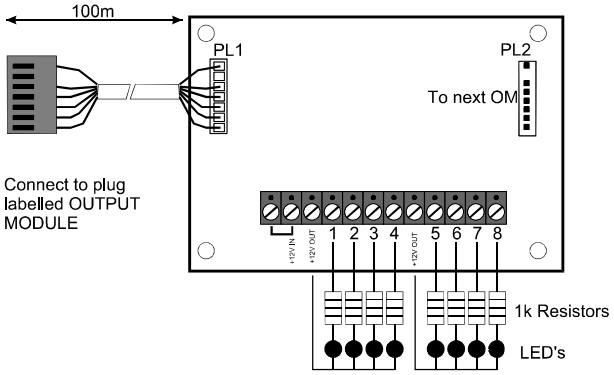


Figure 22. Output Module Connections

Connecting a Printer

The TS790+/900+ supports two type of printers, the CPA6 printer (no longer available) and any standard RS232 printer. When using an RS232 printer a DCI/MPA printer adaptor will be required. Menvier Security supply a DATAC printer kit which consists of a portable RS232 printer, charger unit and DCI/MPA adaptor.

Using the CPA6 Printer

1. Plug the CPA6 printer directly on to the PRINTER plug (JP1) on the main control panel PCB.

✦ *DO NOT plug the printer into JP2 by mistake. If you do then you will damage the printer.*

2. The printer will printout a header, when finished the system program details and event log can be printed.
3. When finished unplug the printer. If the printer is left connected events will be printed as and when they occur.

Using the DATAC / RS232 Printer

1. Plug the DCI/MPA on to the PRINTER plug (JP1) on the main control panel PCB.
2. Plug the other end of the DCI/MPA into the DATAC or RS232 printer.
3. In order for the printer to work correctly ensure the printer is set to the following:
   Baud rate = 4800
   Parity = None
   Start bits = 1
   Stop bits = 2
   Data bits = 8
   DTR = Normal
4. When set-up correctly the system program details and event log can be printed.
5. When finished unplug the MPA/DCI. If the printer is left connected events will be printed as and when they occur.

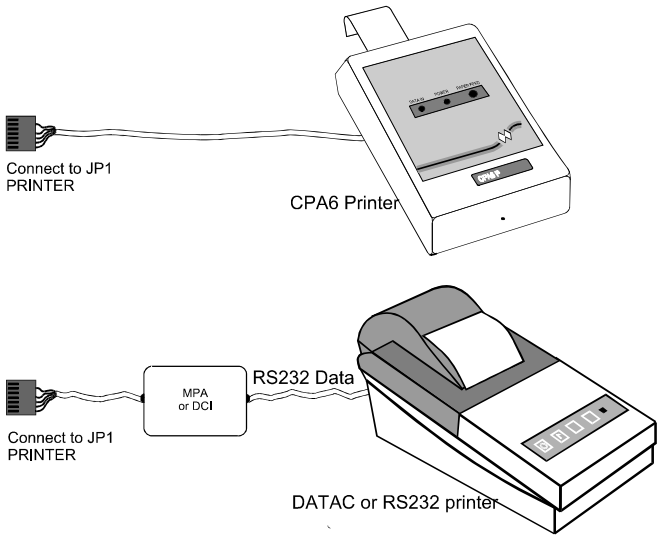


Figure 23. Printer Connections

Programmable Outputs

The TS790+/900+ has many programmable outputs which can be used to drive relays, LED's etc. Each output can be programmed for a different function, see "Programmable Output Types" on page 25.

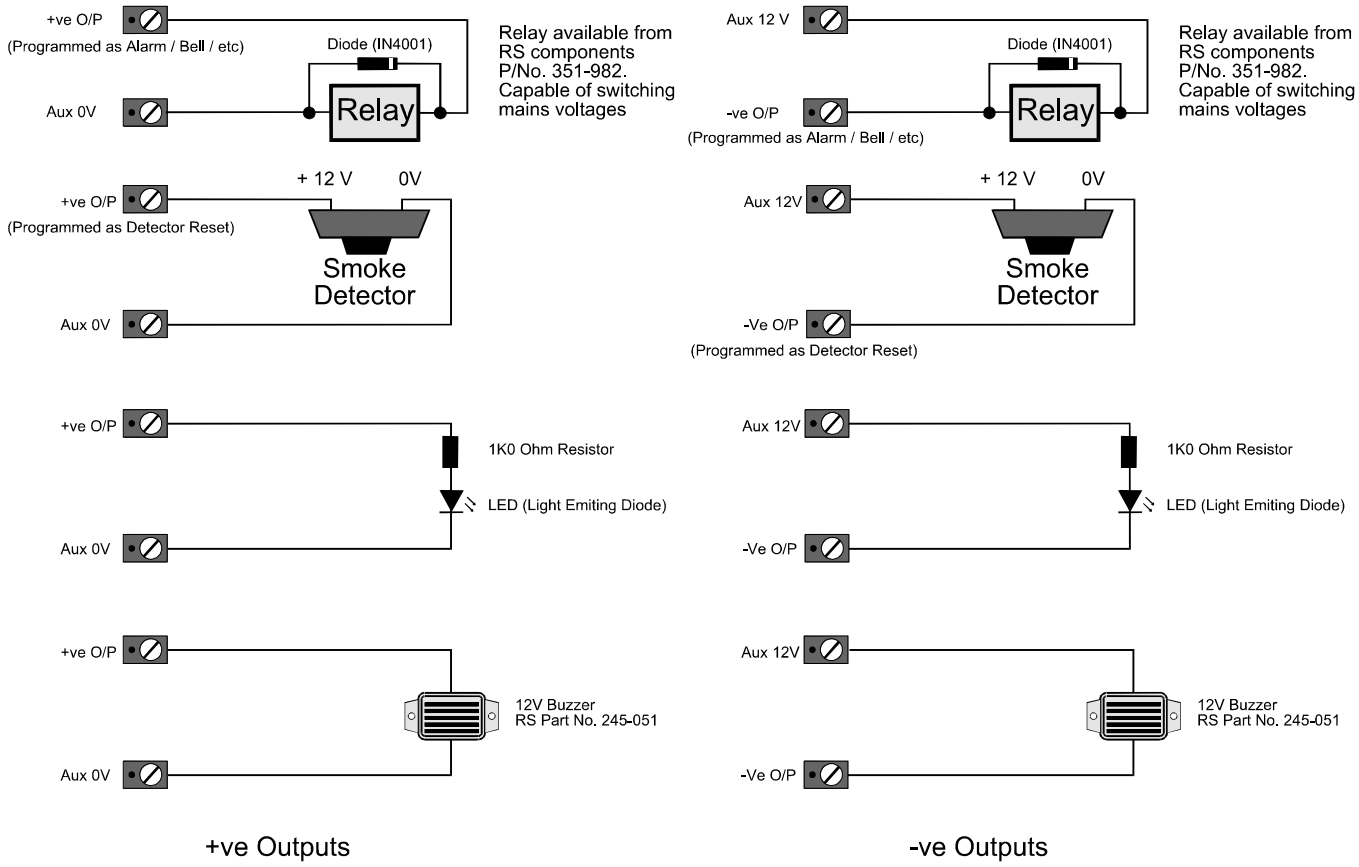


Figure 24.. Output Examples

Control Panel Outputs

The control panel has four programmable outputs:

- [1] Set of voltage free changeover contacts rated at 1 Amp.
- [-2] Switched -ve output rated at 500mA.
- [+3] Switched +ve output rated at 500mA.
- [+4] Switched +ve output rated at 500mA.

XNode Outputs

Each XNode has two programmable outputs:

- [+A] Switched +ve output rated at 100mA.
- [-B] Switched -ve output rated at 100mA.

Remote Keypads & TS700.LECs

Each remote keypad and TS700 LEC has one programmable output:

- [O/P] Switched -ve output rated at 100mA.

Program these as panel outputs 5 to 8.

Installing a Monitored Power Supply

The TS790+/TS900+ can be configured to monitor the 519XB power supply unit using the 519FM fault monitor PCB. The 519FM plugs directly onto the 519XB PCB plug labelled JP1.

The 519FM PCB monitors any combination of:

Supply Failure (mains)

Low Battery Voltage

12V Failure (fuse failure)

In order to monitor the above fault conditions, the outputs on the 519FM must be connected to a detection circuit.

If required, the PSU battery can be "load tested" periodically by connecting a switched +ve output to the 519FM BATT TEST terminal. The battery test occurs every hour on the hour for 30 seconds, if during this time the battery voltage drops below 11.25V a "Battery Fault" indication will be generated.

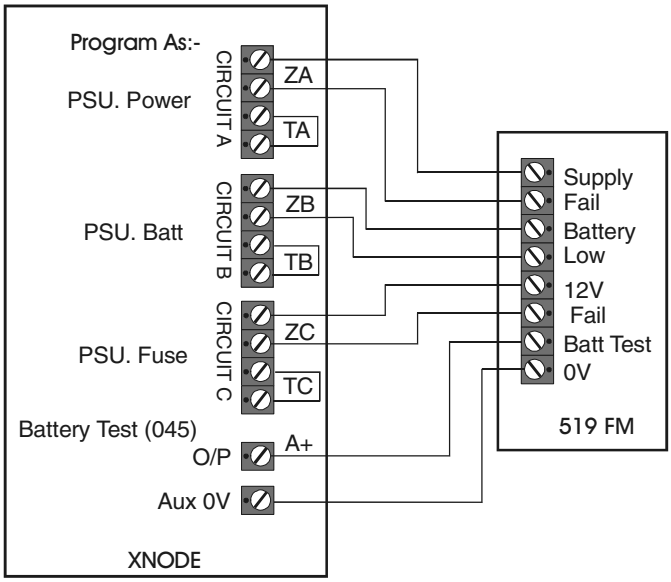


Figure 25. 519FM Connections

Pre Power-Up Checks

Once the system is installed, but prior to powering-up give the system one final check to ensure that:

1. The wiring conforms to the requirements detailed in this manual and that all interconnections are correct (A to A, B to B etc.).
2. All system cables are kept clear of mains supply cables, telephone cables and R.F. cables. It is recommended that cable ties be used to keep cables separated.
3. Verify that maximum cable lengths and resistances are not exceeded.
4. Mains power supply cables to the system are connected to an un-switched fused spur.
5. Grommets are used where cables enter metal housings to ensure that insulation is not compromised.
6. At least one keypad is connected.

Initial Power-Up

To power the system for the first time:

1. Place a small screwdriver blade between the pins on the control panel PCB, marked "FACTORY RESET". This will ensure the factory default parameters are set, *see page 22.*
2. Switch on the 240V mains supply. Leave the screwdriver blade between the pins for at least 10 seconds before removing the screwdriver.
3. Check that the power LED on the control panel PCB is illuminated.
4. Check that the LED remote keypads display "LE" (Panel Lid tamper) and LCD remote keypads display "Panel Lid tamper". The remote keypad sounders and extension loudspeakers will operate.

   - ***If the keypad display shows the words "Foreign Letter" then ensure that the keypad is correctly connected, remove all power, and repeat steps 1-4.***

5. Enter the engineers passcode (default 1234) to silence the sounders.
6. Connect the standby battery.

Power-Up Checks

When the initial power-up checks have been completed, check the following:

1. Switch off the 240V mains supply and measure the DC voltage at each Node and remote keypad and ensure the voltage is greater than 12.8V whilst the system is powered from its standby battery.
2. Switch on the 240V mains supply and measure the DC voltage between the mains earth connection and AUX +12V. Then measure the DC voltage between the mains earth connection and AUX 0V. In both cases the measurement should be 1V or less. If the voltage is greater than 1V, the system has an "Earth Fault" and all cables should be checked for isolation to Earth.
3. Using a voltmeter measure the DC voltage across the control panel PCB test points (V) and calculate the system current consumption (see page 8). Ensure that the reading is not greater than 1.5A.
4. Repeat test (3) with the system in an alarm condition and ensure that the reading is not greater than 1.5A.

   - *The TS790+ & TS900+ have an overload protection circuit. If the power supply is overloaded, the display will show: "PSU OVERLOAD ! ! !" and sounder will sound.*

NVM Defaults

Section	Option	Default
User Codes	User 00 Engineer	1234
	User 01 Master	5678
	User 02 - 31	Not Used
Panel Outputs	Panel Output 1	Walk Test (004)
	Panel Output 2	Courtesy Light (012)
	Panel Output 3	Switch 12V (002)
	Panel Output 4	Detector Reset (003)
	Panel Output 5 KP1	Code Accepted (009)
	Panel Output 6 KP1	Code Accepted (009)
	Panel Output 7 KP2	Code Accepted (009)
	Panel Output 8 KP2	Code Accepted (009)
Digicom Outputs	Digicom Output 1	Fire (007)
	Digicom Output 2	PA (006)
	Digicom Output 3	Alarm (005)
	Digicom Output 4	System Set (008)
	Digicom Output 5	Active Omit (080)
	Digicom Output 6	Bell (000)
	Digicom Output 7	Confirmed Alarm (011)
	Digicom Output 8 (not on JP9/10)	Tamper Fault (020)
Digi Channels	Digi Channel 1	Fire (007)
	Digi Channel 2	PA (006)
	Digi Channel 3	Alarm (005)
	Digi Channel 4	System Set (008)
	Digi Channel 5	Active Omit (080)
	Digi Channel 6	Bell (000)
	Digi Channel 7	Confirmed Alarm (011)
	Digi Channel 8	Tamper Fault (020)
XNode Outputs	XNode Output 1	Walk Test (004)
	XNode Output 2	Courtesy Light (012)
	XNode Output 3	Switch 12V (002)
	XNode Output 4	Detector Reset (003)
	XNode Output 5	Code Accepted (009)
	XNode Output 6	Code Accepted (009)
	XNode Output 7	Code Accepted (009)
	XNode Output 8	Code Accepted (009)
	XNode Output 9	Code Accepted (009)
	XNode Output 10	Code Accepted (009)
Circuits	Circuit 01	Final Exit
	Circuit 02	Night (Access)
	Circuit 03 - 06	Night
	Circuit 07	Exit Terminator
	Circuit 08	PA Audible
	Circuit 09 (Kpd 1)	Final Exit
	Circuit 10 (Kpd 1)	PA Audible
	Circuit 11 - 56	Not Used
System Timers	00 Test Call At	000 hours
	01 No of Re-arms	000
	02 Settle Time	007 seconds
	03 Part Set Coms Dly	000 seconds
	04 Exit Time	030 seconds
	05 Entry Time	015 seconds
	06 Bell Duration	020 minutes
	07 Bell Delay	000 minutes
	08 D-Knock Delay	008 seconds
	09 Test Time	014 days
	10 Second Entry	000 seconds

Section	Option	Default
System Timers	11 Service Time	000 weeks
	12 Payment Time	000 weeks
	13 Part Set Bell Delay	030 seconds
	14 Courtesy Duration	030 seconds
	15 Access Code Dur.	030 seconds
	16 Modem Rings	000
	17 Contact ID Alarm	005
	18 Ward Menu Dur.	000 seconds
	19 Test Call	000 days
	20 Confirmation Time	030 seconds
	21 Part Set Codes	021
	22 Line Fault Delay	000 minutes
	23 Mains Off Delay	000 minutes
	24 No. Remote Resets	005
	25 Monitor Duration	010 minutes
	26 Activity Duration	024 hours
	27 Part Set Entry Time	015 seconds
	28 Abort Delay	180 seconds
Setting Modes	Full Set	Final Exit Setting
	Part Set A	Timed Exit
	Part Set B	Timed Exit
	Part Set C	Timed Exit
Rem Reset	Algorithm	004
Configu-ration	00 Bell is an SAB	Yes
	01 User 1 Limited	No
	02 Fire Signals All	Yes
	03 Silent 24hr Circuits	No
	04 Enable Duress	No
	05 PA Silent	No
	06 Set With Line Fault	Yes
	07 User Reset	Yes
	08 Tamper User Reset	Yes
	09 Hi Security Engineer	No
	10 O/M's Mimic Ccts	Yes
	11 Do Battery Test	No
	12 Final Exit is Night	No
	13 Audible Time Switch	No
	14 Show P.Set Disp.	Yes
	15 Answer Phone Dft	No
	16 Set with AC Off	Yes
	17 Loud Chime Tones	No
	18 Invert Output 1	No
	19 Invert Digi Outputs	No
	20 On-Line Keypad	Yes
	21 Restore Contact ID	Yes
	22 User Authorised	No
	23 Mimic Alarm & Fault	No
	24 Sounder on Confirm	No
	25 Bell on Confirm	No
	26 Confirmation after Entry	No
	27 Entry Confirmation after two circuits	No
	28 Confirmation On	Yes
	29 Entry Keypad Lock	No
	30 Tamp as Burg	No
	31 Unconf Usr Rst	Yes
	32 Keypad PA On	No
Part Set Groups	Part Set Group A	Ward A
	Part Set Group B	Ward B
	Part Set Group C	Ward C
Code Set Groups	Code Set Group A	Ward A
	Code Set Group B	Ward B
	Code Set Group C	Ward C
	Full Set Group	Wards SABC
Custom Text	Reset Message	CALL ENGINEER TO RESET SYSTEM
	Banner Message	Blank
	Location Text	Blank
	Printer Header	Blank
	Part Set Banner	Blank
Modem Options	Call Back No 1	Blank
	Call Back No 2	Blank
	Call Back No 3	Blank
	Modem Password	Blank
	Modem Site No.	Blank

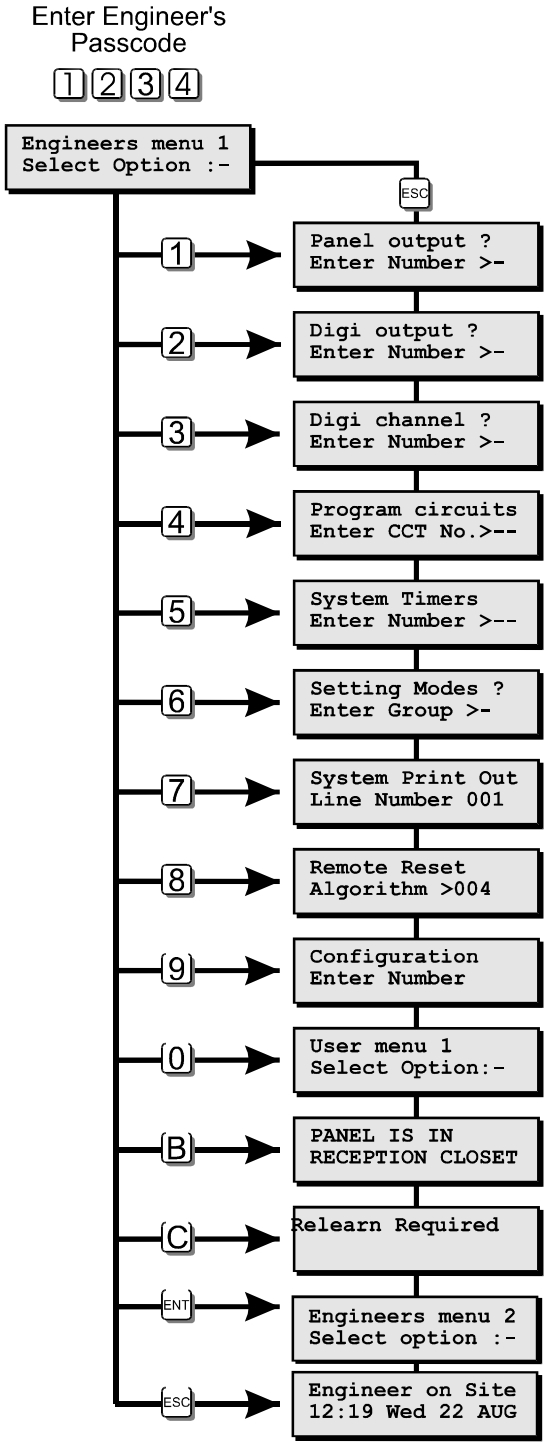
Engineer's Menu 1

Introduction

Engineers menu 1 is the first of three engineers menus, which is selected when the engineer's passcode is entered. The engineer may leave "Engineer menu 1" by pressing the [ESC] key. The system will return to the unset condition but the remote keypads will show "Engineer-on-site". This message will be cleared the next time a valid user passcode is entered or by exiting the engineer's mode via user menu 1.

Menu contents

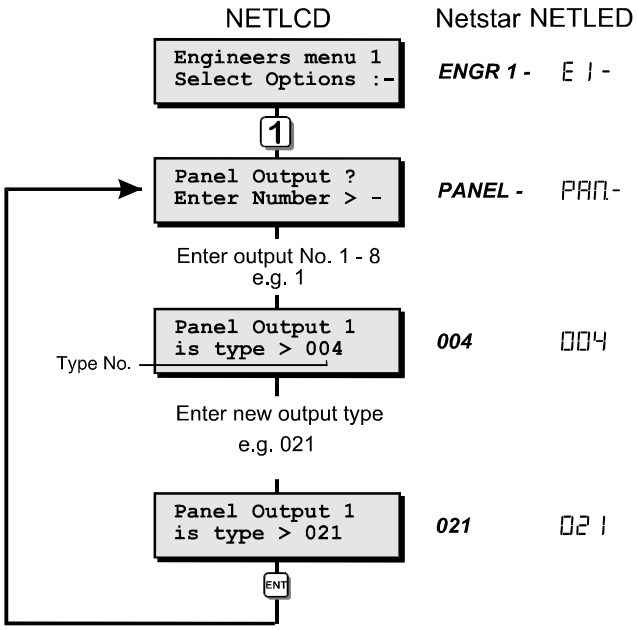
Hotkey	Option	Page
1	Program Panel Outputs	25
2	Program Digicom Outputs	25
3	Program Digicom Channels	25
4	Program Circuits & Attributes	28
5	Program System Timers	30
6	Program Setting Modes	33
7	System Printout	34
8	Remote Reset Number	34
9	Program Configuration	34
0	Goto User Menu 1	37
B	View Location Text	38
C	Relearn Required	38



Engineer's Menu 1

Panel Outputs [1.1]

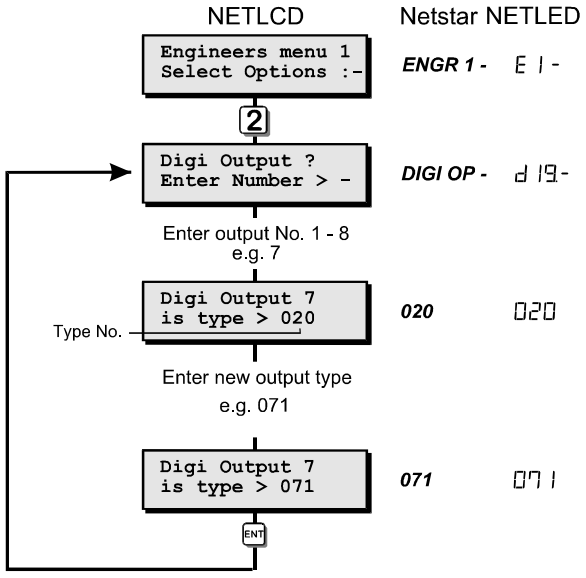
Outputs 1 - 4 on the control panel and remote keypad outputs 5 - 8 can be programmed to any of the output types shown on page 25.



Panel Outputs Flowchart

Digicom Outputs [1.2]

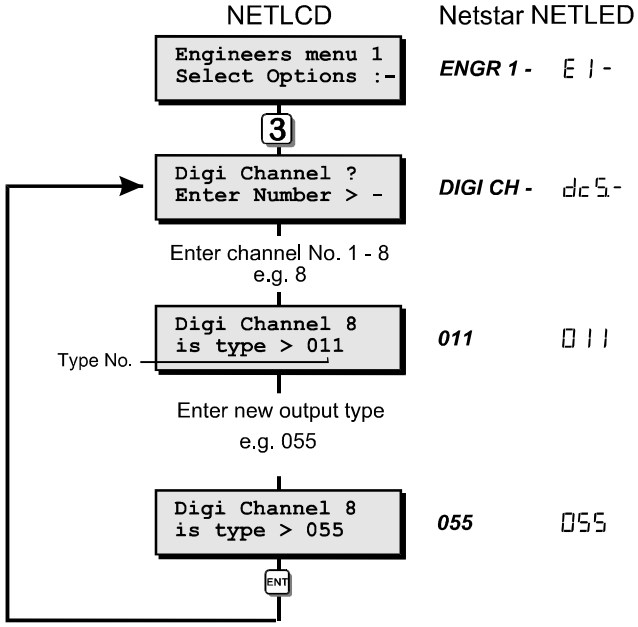
The digicom outputs 1 to 8 and plug-on pins 1 to 7 on the control panel PCB can be programmed to any of the output types shown on page 25. In addition, all outputs can be inverted, *see "Configuration option 19" on page 36.*



Digi Outputs Flowchart

Digicom Channels [1.3]

The 8 plug-on digicom channels can be programmed to any of the output types shown on page 25.



Digi Channels Flowchart

Programmable Output Types

No/Type	Description
000 **Bell On**	Activates when the main Bell trigger is on and deactivates at the end of the Bell Duration time or when the alarm is cancelled by the user.
001 **Strobe On**	Activates when the Strobe trigger is on, and deactivates when the alarm is cancelled by the user.
002 **Switch 12V**	Activates when the system is set and deactivates when an alarm occurs or the system is unset. This output is normally used for latching detectors.
003 **Detector Reset**	Normally active at all times and deactivates for 3 seconds when a valid passcode is entered prior to setting the system. This output is normally used for detector that required power to be removed in order to reset them, e.g., smoke detectors.
004 **Walk Test**	Activates when the "Walk Test" option is selected and deactivates when the "Walk Test" option is finished.
005 **Alarm**	Activates when an intruder alarm is detected and deactivates when the alarm is reset or aborted.
006 **P.A.**	Activates when a PA alarm is detected and deactivates when the alarm is reset.
007 **Fire**	Activates when a Fire alarm is detected and deactivates when the alarm is reset.

No/Type	Description
008 **System Set**	Activates when any ward is set and deactivates when the system is fully unset.
009 **Code Accepted**	Activates for 5 seconds following entry of any valid passcode.
010 **24 Hour**	Activates when a 24Hr alarm is detected and deactivates when the alarm is reset.
011 **Confirmed Alarm**	Activates when a different detector causes an alarm and remains active until a user or engineer resets the system. This output is normally used for an ALARM CONFIRMATION signal.
012 **Courtesy Light**	Activates during entry and when any remote keypad is used. The duration of this output is controlled by the setting of the "COURTESY DUR" timer.
013 **Engr On Site**	Activates when the engineer's passcode is entered and deactivates when a user passcode is entered.
014 **Ccts Omitted**	Activates when a user manually omits any circuit and deactivates when all circuits are reinstated.
015 **Auxiliary**	Activates when an Auxiliary alarm is detected and deactivates when the alarm is reset.
016 **Ward A Armed**	Activates when "Ward A" is in exit mode and when "Ward A" is set. Deactivates when "Ward A" is unset.
017 **Ward B Armed**	Activates when "Ward B" is in exit mode and when "Ward B" is set. Deactivates when "Ward B" is unset.
018 **Ward C Armed**	Activates when "Ward C" is in exit mode and when "Ward C" is set. Deactivates when "Ward C" is unset.
019 **Ward S Armed**	Activates when "Ward S" is in exit mode and when "Ward S" is set. Deactivates when "Ward S" is unset.
020 **Tamper Fault**	Activates when a Tamper alarm is detected and deactivates when the alarm is reset.
021 **Line Fault**	Activates when a telephone line fault is detected and deactivates when the fault is cleared.
022 **Mains Off**	Activates when mains power is removed and deactivates when the mains power is restored.
023 **Exit / Entry**	Activates when the panel is in the exit or entry mode.
024 **Test Fail**	Activates when a circuit fails test, deactivates when reset by the engineer.
025 **First Knock**	Activates when a double knock circuit is activated for the first time. Deactivates when the circuit is activated for the second time or when the system is reset.
026 **Comms Failed**	Activates for 5 seconds when the plug-on digicom fails to communicate.
027 **Comms Success**	Activates for 5 seconds when the plug-on digicom communicates successfully.
028 **Comms Active**	Activates when the plug-on digicom is active and deactivates when the plug-on digicom is inactive.
029 **2nd Entry**	Activates when the second entry timer is started and deactivates when the second entry timer expires.
030 **Entry**	Activates when the panel is in the entry mode.
031 **Exit**	Activates when the panel is in the exit mode.
032 **Ward A Set Fail**	Activates when "Ward A" fails to set and deactivates when the set fail condition is reset by the user.
033 **Ward B Set Fail**	Activates when "Ward B" fails to set and deactivates when the set fail condition is reset by the user.
034 **Ward C Set Fail**	Activates when "Ward B" fails to set and deactivates when the set fail condition is reset by the user.
035 **Ward S Set Fail**	Activates when "Ward S" fails to set and deactivates when the set fail condition is reset by the user.
036 **Ward A Alarm**	Activates when a circuit in set "Ward A" causes an alarm and deactivates when the alarm in "Ward A" is reset.
037 **Ward B Alarm**	Activates when a circuit in set "Ward B" causes an alarm and deactivates when the alarm in "Ward B" is reset.
038 **Ward C Alarm**	Activates when a in set "Ward C" causes an alarm and deactivates when the alarm in "Ward C" is reset.
039 **Ward S Alarm**	Activates when a circuit in set "Ward S" causes an alarm and deactivates when the alarm in "Ward S" is reset.
040 **Time Switch A**	This output is controlled by the settings of "Time Switch A" (see Engineers Menu 3)
041 **Time Switch B**	This output is controlled by the settings of "Time Switch B" (see Engineers Menu 3)
042 **Time Switch C**	This output is controlled by the settings of "Time Switch C" (see Engineers Menu 3)
043 **Access Code**	Activates when an "Access" passcode is entered. The duration of this output is controlled by the setting of the "Acc.CODE DUR" timer (see System Timers).
044 **General Fault**	Activates during battery fault or when the system is prevented from being set. Deactivates when all faults are cleared.
045 **Battery Test**	Activates for 1 minute on the hour every hour. This output is used to test the battery in remote PSU using a 519FM monitor PCB).

No/Type	Description
046 **Service Call**	Activates when the system is on-line with a remote PC and Lineload software.
047 **System Full Set**	Activates when all areas within the system are set and deactivates when any area is unset.
048 **Custom O/P A**	This output is active when a combination of output conditions occur. The combinations are programmed in Engineers Menu 3 *(see page 51)*.
049 **Custom O/P B**	This output is active when a combination of output conditions occur. The combinations are programmed in Engineers Menu 3 *(see page 51).*
050 **PC output 1**	This output can be switched on or off via the PC and "Lineload" software.
051 **PC output 2**	This output can be switched on or off via the PC and "Lineload" software.
052 **Sounder Control**	Normally used as the 0V connection for an extension loudspeaker so that only system alarm tones are generated. Only suitable for Panel Outputs 1 and 2.
053 **Service Required**	Activates when the "SERVICE REQUIRED" message is displayed and deactivates when the engineer passcode is entered.
054 **Call Engineer**	Activates when the system requires an "Engineer Reset", deactivates when the system is reset by the engineer or "Remote Reset".
055 **Always Off**	Never activates.
056 **Duress**	Activates when a duress passcode is entered and deactivates when the duress alarm is reset.
057 **System Part Set**	Activates when the system is part set, deactivates when the system is fully unset or fully set.
058 **Battery Fault**	Activates when a battery fault occurs and deactivates when the battery fault is cleared.
059 **Set Fail**	Activates when any ward fails to set, deactivates when the set fail condition is reset.
060 **Open/Close**	Activates when the system is unset, deactivates when the system is set/part-set.
061 **ID Alarm**	Activates for 2 seconds when any circuit causes a new alarm condition.
062 **Random**	Activates randomly (min = 5 minutes, max =60 minutes)
063 **Modem lockout**	Activates when the modem is locked-out (four failed attempts). Deactivates when a master user passcode is entered or after 4 hours.
064 **Sndr Control A**	Activates when "Ward A" is in entry, exit, alarm or set fail.
065 **Sndr Control B**	Activates when "Ward B" is in entry, exit, alarm or set fail.
066 **Sndr Control C**	Activates when "Ward C" is in entry, exit, alarm or set fail.
067 **Sndr Control S**	Activates when "Ward S" is in entry, exit, alarm or set fail.
068 **Chime**	Activates for 2 seconds when a circuit that is programmed as "chime" is activated.
069 **24hr Ccts Omit**	Activates when one or more 24 Hour circuits are omitted.
070 **Timed Output**	Activates when a "Monitored" circuit is triggered and remains active for the duration of the "Monitor Dur" *see System Timers*.
071 **Abort**	Activates for 5 seconds after an alarm is aborted by the user. The period in which the alarm may be aborted is set by the "Abort Delay" *see System Timers*.
072 **Strobe on Set A**	Activates when there is an alarm in Ward A, and deactivates when the alarm is cancelled by the user. This output is also active for 10 seconds after a user sets Ward A with full alarm response.
073 **Strobe on Set B**	See "Strobe on Set A". Applies to Ward B.
074 **Strobe on Set C**	See "Strobe on Set A". Applies to Ward C.
075 **Strobe on Set (System)**	Activates when there is an alarm in on the system, and deactivates when the alarm is cancelled by a user. This output is also active for 10 seconds after a user sets any Ward with full alarm response.
076 **Alarm Conf A**	This output is active during a confirmed alarm in Ward A.
077 **Alarm Conf B**	This output is active during a confirmed alarm in Ward B.
078 **Alarm Conf C**	This output is active during a confirmed alarm in Ward C.
079 **Alarm Conf (System)**	This output is active during a confirmed alarm anywhere in the system.
080 **Active Omit**	If an event triggers a latching circuit type (for example a door or break glass, but NOT a PIR), and the circuit remains active until the end of the confirmation time then the control panel omits the active zone and triggers the Active Omit output. The control panel deactivates the output when a user disarms the system.
081 **Keyswitch Disabled**	The control unit activates this output when it detects a tamper on the keyswitch.
100 - 155 **Circuit Mimics**	Will mimic (active when circuit is active) circuits 01 to 56 respectively

No/Type	Description
200 - 255 **Circuit Alarms**	Active when a circuit causes an alarm, for circuits 01 to 56 respectively .

Program Circuits [1.4]

The TS790+ can monitor up to 16 detection circuits, whereas the TS900+ can monitor up to 56 detection circuits. Each circuit must be programmed in order for the system to respond correctly.

Circuit Types

The circuit type defines how the circuit will respond when it is triggered. The following circuit types are available:

0 Not Used
A circuit that will never generate any alarm.

1 Night
A circuit that will generate a full alarm when the system is set.

2 24hr
A circuit which is monitored at all times. When triggered in the unset condition a local alarm is generated and when triggered in the set condition a full alarm is generated. Note that the system ward has to be set in order for a 24Hr circuit to generate a full alarm condition.

3 PA Silent
A circuit which is monitored at all times. When triggered it will activate any outputs that are programmed as P.A.

4 PA Audible
A circuit which is monitored at all times. When triggered it will activate any outputs that are programmed as P.A. and generate a full alarm condition.

5 Fire
A circuit that is normally connected to a smoke detector. When triggered it will generate a fire tone on the internal sounders, the external sounders are pulsed for the bell duration and any outputs programmed as fire will be activated.

6 Auxiliary
A circuit which is monitored at all times. When triggered it will activate any outputs programmed as Auxiliary.

7 Final Exit
This must be the first detector or door contact that is triggered when entering the protected area. When the setting mode for the system is programmed for Final Exit setting, opening and closing of this circuit during the exit procedure will cause the system to set. Once set, activation of this circuit will start the entry timer.

8 Exit Terminator
A circuit that is normally connected to a push button outside the protected premises, which can be used to finally set the system or area.

9 Keyswitch
(Also includes Lockset.) A circuit that may be connected to a keyswitch to allow setting and/or part-setting of the system.

The Keyswitch circuit has two groups of attributes. The first group of attributes control the wards that are set/unset when the circuit is switched between "Healthy" and "Active". The second group of attributes selects the type of Keyswitch (Momentary or Latched) or selects the Lockswitch zone type.

When programming the Keyswitch circuit the eight standard attributes are not available, instead the attributes are used to select the Keyswitch operation as follows:

[1] Full Set Group - "Healthy" to "Active".

[2] Code Set Group A - "Healthy" to "Active".

[3] Code Set Group B - "Healthy" to "Active".

[4] Code Set Group C - "Healthy" to "Active".

[5] Lockset - See Lockset Exit Mode.

[6] Momentary - Use for Momentary type keyswitches. De-select for Latched keyswitches.

[7] Inverted - Inverts the operation of the keyswitch.

If the "Keyswitch" is not assigned to any of the above options, the circuit becomes a "Monitored" circuit. A "Monitored" circuit is monitored at all times. When triggered it will activate any outputs that are programmed as Timed Output and log the event.

A PSU-Battery
This circuit may be connected to the 519XB power supply via the 519 FM PCB to allow the monitoring of the standby battery. See "Installing a Monitored Power Supply" on page 21.

B PSU-Fuse
This circuit may be connected to the 519XB power supply via the 519 FM PCB to allow the monitoring of the standby battery. See "Installing a Monitored Power Supply" on page 21.

C PSU-Power
This circuit may be connected to the 519XB power supply via the 519 FM PCB to allow the monitoring of the mains power failure. See "Installing a Monitored Power Supply" on page 21.

Circuit Attributes

Each circuit type can have one or more attributes assigned to it to alter its operation. The following circuit attributes can be programmed:

1 Access
Circuits programmed with this attribute are automatically isolated during the entry procedure to allow a "walk through" route for the user to access the remote keypad. The "Access" attribute can only be assigned to Night and Final Exit circuit types.

2 Double Knock
Circuits programmed with this attribute will only cause an alarm condition if:

a) The circuit is activated twice within the Double Knock window (this time may be set in the System Timers menu).

b) The circuit remains active for the whole duration of the Double Knock window. The "Double Knock" attribute can only be assigned to Night, 24hr, PA and Auxiliary circuit types.

3 Test
Circuits with this attribute will be disabled from the system for the period set by the "Test Time" (see System Timers). If the circuit is activated during this period the activation will be logged and the user is informed of the circuit failure when trying to set the system. The test fail message may only be cleared with the Engineers passcode. If at the end of the test period no activations have occurred the circuit is automatically removed from test and behaves as normal. The test period is initiated by entering the Engineers passcode. The "Test" attribute can only be assigned to Night, 24hr, PA Silent, PA Audible, Fire, Auxiliary, PSU Battery, PSU Fuse and PSU Power circuit types.

4 Omittable
Circuits with this attribute are allowed to be omitted by the user when setting the system. The "Omit" attribute can only be assigned to Night, 24hr, Auxiliary, PSU Battery, PSU Fuse and PSU Power circuit types.

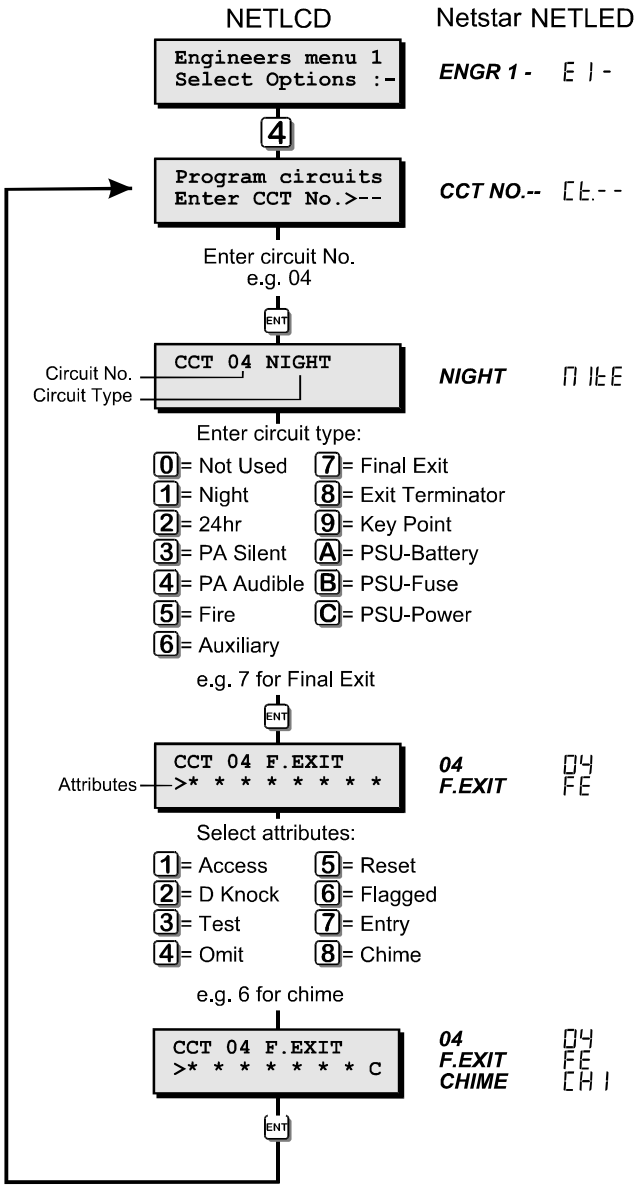
5 Reset
This attribute is normally assigned to a circuit that is connected to a vibration or smoke detector, so that during the "Detector Reset" period the circuit is not monitored. The "Reset" attribute can only be assigned to Night, 24hr, Fire and Auxiliary circuit types.

6 Flagged
Circuits with this attribute are monitored during the unset condition so that when they activate the circuit activation is stored. When the user decides to set the system, any circuits that have not been activated during the "Activity Dur" period are reported to the user, indicating that the detector may be obstructed. An example of this feature would be to assign movement detectors within a warehouse area with this attribute. This would report to the user at the time of setting any detectors that have become obstructed by pallets etc. The "Flagged" attribute can only be assigned to Night, Final Exit and Exit Terminator circuit types.

7 Entry
Circuits with this attribute will initiate the entry procedure when the system is part-set and respond as normal when full set. This attribute must be assigned to all circuits that are required to initiate the entry procedure in the part-set condition. The "Entry" attribute can only be assigned to Night, 24hr and Final Exit circuit types. When assigned to a 24 Hour circuit type, the circuit can be used to initiate the entry procedure. Once the system is unset the 24 hour will revert to normal operation.

8 Chime

Circuits with this attribute will cause the internal sounders and remote keypad sounders to generate a two tone "chime" sound if the circuit is activated. The users may enable or disable the chime feature, or select it to operate when the system is unset or part-set. The "Chime" attribute may only be assigned to 24hr, Auxiliary, Final Exit and Exit Terminator circuit types.



Program Circuits Flowchart

System Timers [1.5]

The system timers are as follows:

00 Test Call At

This timer controls the hour at which the control unit sends a timed test call. For example, if the timer is set at 003 (default) then the control unit sends a test call at 03:00 am. If the timer is set to 014 then the control unit sends the test call at 02:00 pm.

01 No of Re-Arms

At the end of the bell duration time the system re-arms all circuits that are healthy. Circuits that are still in an alarm are isolated until they change to a healthy condition. This counter controls the number of times that a "circuit" will re-arm before it is locked out of the system. This counter has a working range of 000-199.

02 Settle Time

When setting the system by "Final Exit" or "Exit Terminator", detectors that are on the exit route sometimes take 3-4 seconds to settle after activation. The delay programmed in this timer is used to allow these detectors to settle before the system or area is set. This timer has a working range of 000-199 seconds.

03 Part Set Comms Delay

When the system is part-set the communication of an alarm signal to the central station can be delayed by the value set in this timer. If the timer is set to 199 the part-set communications are disabled. This timer has a working range of 000-199 seconds.

04 Exit Time

This timer sets the delay between the user initiating the exit procedure and the system (or area) actually setting. If during the exit time an "Exit Terminator" circuit is activated the exit time is cancelled and the system sets immediately. This timer has a working range of 000-199 seconds.

05 Entry Time

When the system is set or part-set, and the entry procedure is initiated, the entry timer starts to count down. If a valid user passcode has not been entered when the timer reaches zero, the internal sounders are

activated and the "2nd Entry. . ." timer is started. This timer has a working range of 000-199 seconds.

06 Bell Duration
This controls the duration of the external bell/sounder. If the timer is set to 199 the bell output is continuous. This timer has a working range of 000-199 minutes.

07 Bell Delay
This timer delays the activation of the external bell/sounder and internal sounders. This timer has a working range of 000-199 minutes. Note: Any alarm during the entry procedure will cancel the bell delay.

08 Double Knock Delay
This is the "Double Knock" time window in which either two circuit activation must occur within this time to generate an alarm condition. Or the circuit must remain active for the whole duration of this time to generate an alarm condition. This will only apply to circuits with the "Double Knock" attribute. This timer has a working range of 000-199 seconds.

09 Test Time
This timer varies the number of days that "Test" attribute may be applied to a circuit. If the timer is set to 000 then circuits will remain on test until the "Test" attribute is removed. This timer has a working range of 000-030 days.

10 Second Entry
When the "Entry Timer" has expired the "2nd Entry timer" starts to count down, if at the end of this time the system or area has not been unset then a full alarm will be generated. This timer has a working range of 000-199 seconds.

11 Service Time
The installation company may use this timer to periodically generate a "SERVICE REQUIRED" message so that the user is reminded that a service call is required. The users may continue to set and unset the system. When the engineer attends the site and enters their passcode the message is cleared. The service timer is re-started when the engineer re-selects this timer option. To disable this feature set the timer to 000. This timer has a working range of 000-199 weeks.

12 Payment Time
The installation company may use this timer to prevent the users from setting the system. When the timer has expired the "CALL ENGINEER" message is displayed and the users are unable to set the system until the engineer has reset the system or the user has been provided with a "Remote Reset" code. To disable this feature set the timer to 000. This timer has a working range of 000-199 weeks.

13 Part Set Bell Delay
This timer delays the activation of the external bell/sounder and internal sounders when the system is part set. This timer has a working range of 000-199 minutes. Note: Any alarm during the entry procedure will cancel the bell delay.

14 Courtesy Duration
This timer is used to control the duration of the output type "Courtesy Light". This timer has a working range of 000-199 seconds.

15 Access Code Duration
This timer is used to control the duration of the output type "Access". This timer has a working range of 000-199 seconds.

16 Modem Rings
This counter is for use with the DC58M, it allows the installer to specify how many rings are required before the DC58M picks up the call. If the counter is set to 000 it will pick the call up as soon as any incoming ringing is detected. Note: If the system is fitted with a DC3M, the counter must be set to zero. This counter has a working range of 000-199.

17 Contact ID Alarms
When using the DC58 or DC58M and "Contact ID Extended Reporting". The number of Contact ID alarms that are transmitted to the central station per circuit are controlled by the value of this counter. e.g., if the counter is set to 003 then all circuits will report 3 activation's before they are locked out from sending any more. Note: this does not affect the re-arm of the zone. This counter has a working range of 000 - 199.

18 Ward Menu Duration
If the timer is set to 000 the "Code Set Group" passcodes function as normal, i.e.,

when the user enters their passcode the exit timer starts and the system attempts to set, on entering their passcode during entry, the wards assigned to their "Code Set Group" are unset. If the timer is set to anything other than zero all "Code Set Group" users are displayed a "Ward Selection Menu". The menu will prompt the user to select the wards that they require to set and unset during the setting & unsetting procedure. The user can only select the wards which have been allocated to their "Code Set Group", e.g., If "Code Set Group A" has been defined by the engineer to set wards B & C, the user can only affect wards B & C. Note: standard and master users may also access the "Ward Selection Menus", see timer 21. This timer has a working range of 000-199 seconds.

19 Test Call
If the system is fitted with a plug-on digicom (DC3, DC3M, DC54, DC58 or DC58M) it is possible for the control panel to make the digicom send a timed test call to the central station. The "Test Call" timer sets the period of activation, i.e., 000=Disabled, 001=daily, 007=weekly etc. Once programmed the digicom will send the test call at 3.00 AM. This timer has a working range of 000-199 days.

20 Confirmation Time
This timer controls the duration of the "Alarm Confirmation" period. The timer has a working range of 000-199 minutes.

21 Part Set Codes
The value of this counter determines which standard users are given access to the "Ward Selection Menu". For example if the counter is set to 021, users 21 through to 31 have access to the menu. If the timer is set to 032 or above, none of the standard/master users have access to the menu. This counter has a working range of 000-199. Note: "Code set Groups" are not affected.

22 Line Fault Delay
This timer delays the "audible" line fault indication when a telephone line fault occurs. The display and any outputs programmed as "Line Fault" are not affected. This timer has a working range of 000-198 minutes. If you set the timer to 199 then the control unit stops the audible fault indication (but still logs the fault and shows it on the display).

23 Mains Off Delay
This timer delays the "audible" mains off indication when the mains power is removed. The display and any outputs programmed as "Mains Off" are not affected. This timer has a working range of 000-198 minutes. If you set the timer to 199 then the control unit stops the audible fault indication (but still logs the fault and shows it on the display).

24 No Remote Resets
This counter determines how many coded "Remote Resets" can occur before the system locks into engineer reset only. Note: Remote Reset by the RR pins are also affected by this counter. This counter has a working range of 000-199.

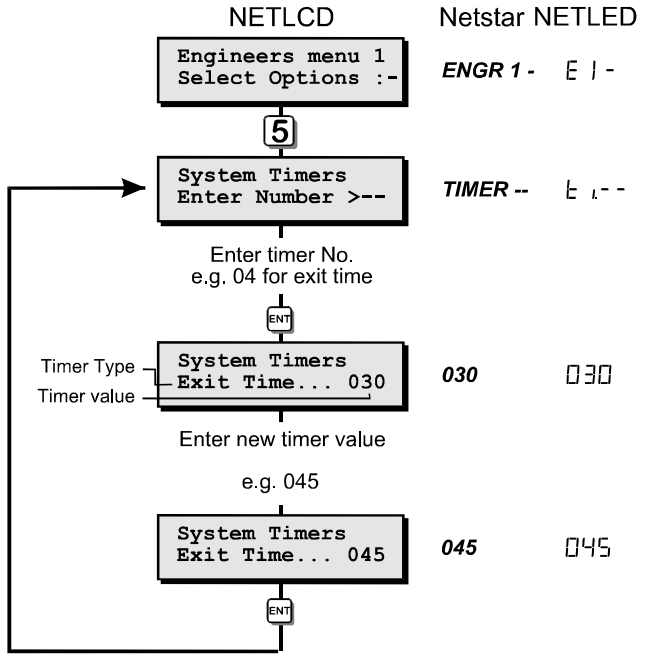
25 Monitor Duration
This timer affects the duration of the "Timed Output" (No. 070). This timer has a working range of 000-199 minutes.

26 Activity Duration
This timer sets the duration for which all "Flagged" circuits must be activated within in order that the system may be set without flagging inactive circuits. Once the timer expires it is restarted and all "Flagged' circuits must once again be re-activated. This timer has a working range of 000-199 hours.

27 Part Set Entry Time
This timer sets the entry period for the system when the system is in the part-set condition. If the timer is set to 000 the part-set entry timer is the same as the main entry timer (timer 05). This timer has a working range of 000-199 seconds.

28 Abort Delay

This timer sets the period in which the alarm signal may be aborted following an alarm condition. When an alarm occurs, the "Abort Output" (071) is only activated if the system is unset within this period. If the system is unset after this period the abort output is NOT activated. This timer has a working range of 000-199 seconds.



System Timers Flowchart

Setting Modes [1.6]

The setting mode for full set and each part set can be configured to the following setting modes:

1 Final Exit
The system will set when the "Final Exit" circuit is activated and after the "Settle Time" has expired.

2 Exit Terminator
The system will set when the "Final Exit" circuit is activated, the "Exit Terminator" button is pressed and after the "Settle Time" has expired.

3 Timed Exit
The system will set when the "Exit Time" has expired or if the "Exit terminator" button is pressed.

4 Instant
The system will set instantly.

5 Deferred
Any circuit triggered during the exit will restart the exit timer.

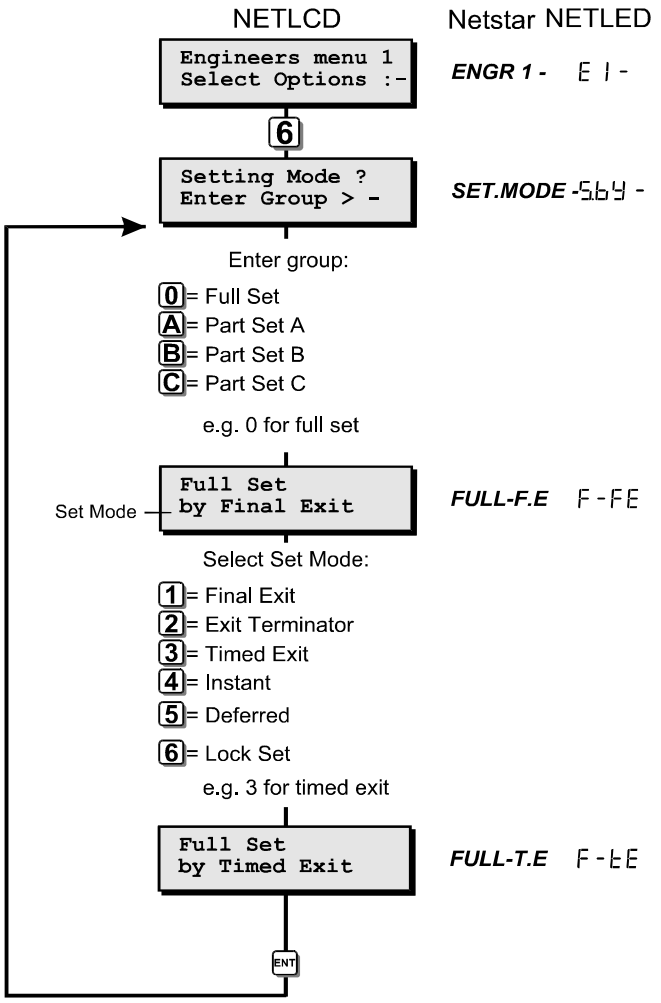
6 Lock Set
To use this method you must install a lock switch with the contacts connected to a lockset zone type.

To set the system the user first enters their access code at a keypad or operates a keyswitch. The control unit starts the exit tone. Note that the exit time is infinite in this option. The user then operates the final exit zone and turns the key in the lock switch to "locked". The system sets seven seconds after the lock switch contacts open.

To unset the system the user turns the lock switch to "unlocked" (closing the lock switch contacts). The keypads start a continuous tone. At this point the user can lock the lockswitch again without causing any alarm. When the user opens the final exit zone the control unit starts the entry timer. The user completes entry by unsetting the system in the normal way.

Note that when the user unlocks the lockswitch the control unit disables Alarm Confirmation. The control unit enables Alarm Confirmation again if the user locks the lockswitch without starting the entry timer.

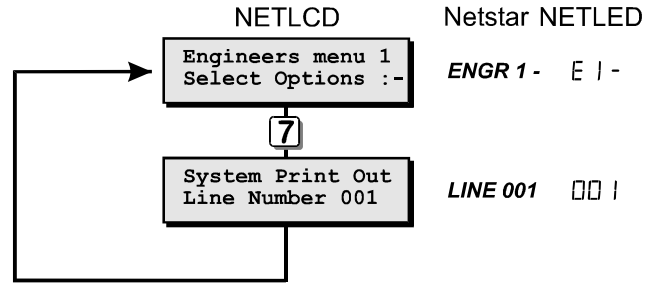
If an intruder opens the final exit door without first unlocking the lockswitch then the control unit immediately starts an unconfirmed alarm. If the intruder goes on to violate another zone and you have enabled Alarm Confirmation then the control unit sends a confirmed alarm.



Setting Modes Flowchart

Do System Print [1.7]

If a printer is connected to the control panel a print out of all system parameters can be obtained.

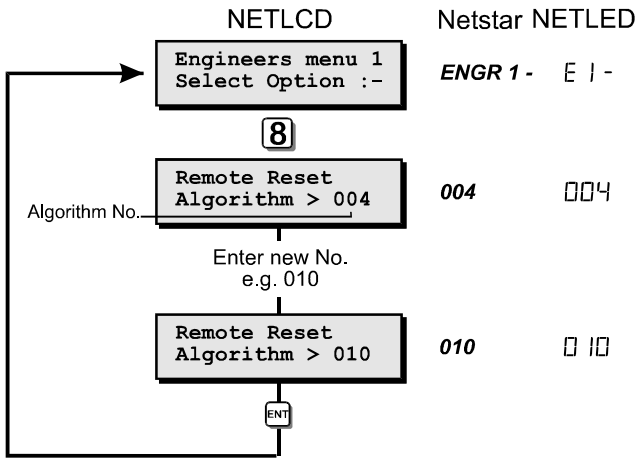


System Print Flowchart

Remote Reset Algorithm [1.8]

When the system is programmed for "Engineer Reset" the requirement to send an engineer to site can be overridden by the user by using the "Remote Reset" facility. If an alarm is generated the system will respond with a four digit "seed" code which the user quotes to the Alarm Receiving Centre or alarm company. The "seed" code is then entered into a decoder and a unique "Remote Reset" code is generated. This is passed back to the user and on entering the "Remote Reset" code, the system is reset.

The "Remote Reset" code is generated using an algorithm identified by a 3 digit number. Alternative algorithms can be selected but these must correspond to that used by the ARC (or alarm company) otherwise the "Remote Reset" code will be incorrect. *(Default = 004)*



Remote Reset Algorithm Flowchart

Configuration [1.9]

The configuration options are as follows:

00 Bell Is an SAB

When programmed as "Yes" the control panel bell output applies 0V when active. When programmed as "No" the control panel bell output removes 0V when active. *(Default = Yes)*

01 User 1 Limited

When programmed as "Yes" user 1 is disabled from options 6 and 8 in user menu 2 , and all options in user menu 3. When programmed as "No" user 1 has access to all user menus and options. *(Default = No)*

02 Fire Signals all
When programmed as "Yes" fire alarm activations are signalled to the ARC at all times. When programmed as "No" fire alarm activations are signalled to the ARC only when the system is full set. *(Default = Yes)*

03 Silent 24hr Circuits
When programmed as "Yes" 24hr circuit are silent. When programmed as "No" 24hr circuits are audible. *(Default = No)*

04 Enable Duress
When programmed as "Yes" the reversal of the first two digits on any passcode will generate a duress alarm. When programmed as "No" the reversal of the first two digits on any passcode will NOT generate a duress alarm. *(Default = No)*

05 PA Silent
When programmed as "Yes" PA's activated by pressing keys 1&3 on the remote keypad will be silent. When programmed as "No" PA's activated by pressing keys 1&3 on the remote keypad will be audible. *(Default = Yes)*

06 Set with Line Fault
When programmed as "Yes" the system can be set with a telephone line fault, however the user will be asked to confirm this at the time of setting. When programmed as "No" the system cannot be set with a telephone line fault. *(Default = Yes)*

07 User Reset
When programmed as "Yes" alarms can be reset by the user. When programmed as "No" and alarm confirmation is disabled then alarms can only be reset by the engineer or via remote reset. Note that even though user reset is disabled, while alarm confirmation is enabled users can reset the system after an unconfirmed alarm. *(Default = Yes)*

08 Tamper User Reset
When programmed as "Yes" the user can reset daytime tamper alarms. When programmed as "No" only the engineer can reset daytime tamper alarms. *(Default = Yes)*

09 High Security Engineer
When programmed as "Yes" the engineer must enter his passcode and remote reset number to gain access to engineer's menu 1. When programmed as "No" only the engineer's passcode is required to access engineer's menu 1. *(Default = No)*

10 O/M's Mimic Circuits
When programmed as "Yes" the output modules mimic circuit activations. When programmed as "No" output modules give circuit alarm indication. *(Default = Yes)*

11 Do Battery Test
When programmed as "Yes" the control panel battery and any monitored PSU batteries are tested every hour and when exiting the engineer's mode. When programmed as "No" the control panel battery and any monitored PSU batteries are not tested. *(Default = No)*

12 F.Exit is Night
When programmed as "Yes" final exit circuits change to night circuits when the system is part set. When programmed as "No" final exit circuits remain as final exit circuits when the system is part set. *(Default = No)*

13 Audible Time Switch
When programmed as "Yes" the internal sounder will activate when any of the time switched outputs are active. When programmed as "No" the time switched outputs remain silent. *(Default = No)*

14 Show Part Set Information (LED Keypads)
When programmed as "Yes" the display will alternate between showing the time and wards that are set when the system is part set. When programmed as "No" the display will always show the time when the system is part set. *(Default = Yes)*

15 Answer Phone Defeat
For use with the DC58M to allow downloading to be carried out on telephone line with answer phones. When programmed as "Yes" Answer Phone Defeat is enabled. *(Default = No)*

16 Set with AC Off
When programmed as "Yes" the system can be set with no mains power. When programmed as "No" the system cannot be set with no mains power. *(Default = Yes)*

17 Loud Chime Tones
When programmed as "Yes" the chime tones are always at full volume. When programmed as "No" the chime tones are at the level set by VR1 on the main PCB. *(Default = No)*

18 Invert Output 1
When programmed as "Yes" panel output 1 is inverted. When programmed as "No" panel output 1 is normal. *(Default = No)*

19 Invert Digi Outputs
When programmed as "Yes"" the eight digicom outputs on the control panel switch from 0V to +12V when active (+ve applied). When programmed as "No" the eight digicom outputs on the control panel switch from +12V to 0V when active (+ve removed). *(Default = No)*

20 On-Line Keypad
When programmed as "Yes" the Menvier Lineload On-Line Keypad feature is enabled. When programmed as "No" the Menvier Lineload On-Line Keypad feature is disabled. *(Default = Yes)*

21 Restore Contact ID
When programmed as "Yes" the Contact ID restore status is transmitted. When programmed as "No" Contact ID restore is not transmitted. *(Default = Yes)*

22 User Authorised
When programmed as "Yes" the Menvier Lineload software can only write information to the control panel after the user has authorised remote communications. When programmed as "No" the Menvier Lineload software can write information to the control panel without user authorisation. *(Default = No)*

23 Mimic Alarms and Faults
When programmed as "Yes" any outputs programmed as the type "Circuit Alarm" will activate when the relevant circuit is armed and in alarm or in a fault condition. When programmed as "No" any outputs programmed as the type "Circuit Alarm" will activate when the relevant circuit is in alarm, whether the circuit is armed or disarmed. *(Default = No)*

24 Sounder on Confirm
When programmed as "Yes" the control unit activates the internal sounders after a confirmed alarm and any programmed bell delay. When programmed as "No" the control unit starts the internal sounders immediately after an unconfirmed alarm. *(Default = No)*

25 Bells on Confirm
When programmed as "Yes" the control unit activates the external sounders after a confirmed alarm and any programmed bell delay. When programmed as "No" the control unit activates the external bell immediately after an unconfirmed alarm. *(Default = No)*

26 Confirmation After Entry
When programmed as "Yes" the control unit sends a confirmed alarm if the intruder activates one or two separate zones after the entry timer expires. To select between one or two zones use "27 Entry conf 2 cct" When programmed as "No" the control unit disables alarm confirmation when a user starts the entry timer. *Use the "No" option to comply with DD243:2002 paras 6.4.2, 6.4.3, 6.4.4 and 6.4.6.*
(Default = No)

27 Entry Confirmation After 2 circuits
When programmed as "Yes" the control unit sends a confirmed alarm if an intruder activates two separate zones after the entry timer expires. If the control unit is in alarm before the user starts entry then only one subsequent zone violation is required.
Note: Select this option if you are installing a DD243:2002 para 6.4.5 compliant system and the user must unset the system with a proximity detector ("Portable ACE").
When programmed as "No" the control unit sends a confirmed alarm if the intruder activates one zone after the entry timer expires. This option does not comply with DD243:2002.

If you program Confirmation After Entry as "No" then the setting of this option has no effect.

28 Confirmation On
When programmed as "Yes" then the Digicom reports a Channel 3 (005 Intruder)

for an intruder alarm as normal. If a subsequent zone is triggered within the same set period then the Digicom reports Channel 7 (011 Confirmed Alarm). The ARC operator can now inform the appropriate police authority that the alarm is confirmed and that this is likely to be a real break in and not a false alarm.
When programmed as "No" then both Alarm Confirmation and all Confirmed Alarm outputs are disabled.
(Default = Yes)

29 Entry Keypad Lock

When programmed as "Yes" then users cannot unset the system from a keypad during entry. *Program this option as "Yes" if you are installing a DD243:2002 compliant system and the user must unset the system with a proximity detector ("Portable ACE").*
The user must employ a proximity tag to disarm the system during the entry period.
When programmed as "No" then users can unset the system from a keypad during entry.
(Default = No)

30 Tamp as Burg

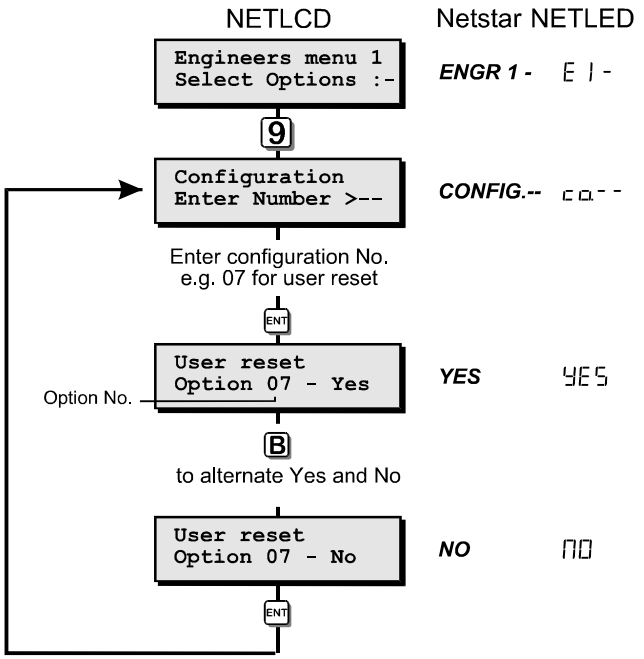
DD243: 2002 states that alarm signals and confirmation signals must be transmitted using certain codes. In some case these codes do not conform to Cooper Security Ltd's implementation of the CID standard. This option allows you to program the control unit to send tampers as alarm.
When programmed as "Yes" then the control unit sends tampers to the ARC as Intruder Alarm (CID 130). In Fast Format the control unit transfers the Digicom Tamper output (default output 8) to the Digicom Alarm output (default output 3).
When programmed as "No" the control unit sends all messages as specified in Report Mode.
(Default = No)

31 Unconf User Rst

When programmed as "Yes" then users can reset the system after an unconfirmed alarm. When programmed as "No" then an engineer or the ARC must reset the system after an unvonfirmed alarm.
(Default = "Yes")

32 Keypad PA On

Whe programmed as "Yes" then the user can start a PA alarm by pressing keys 1 and 3 at the same time. Program as "No" to remove this option.
(Default = "No".)



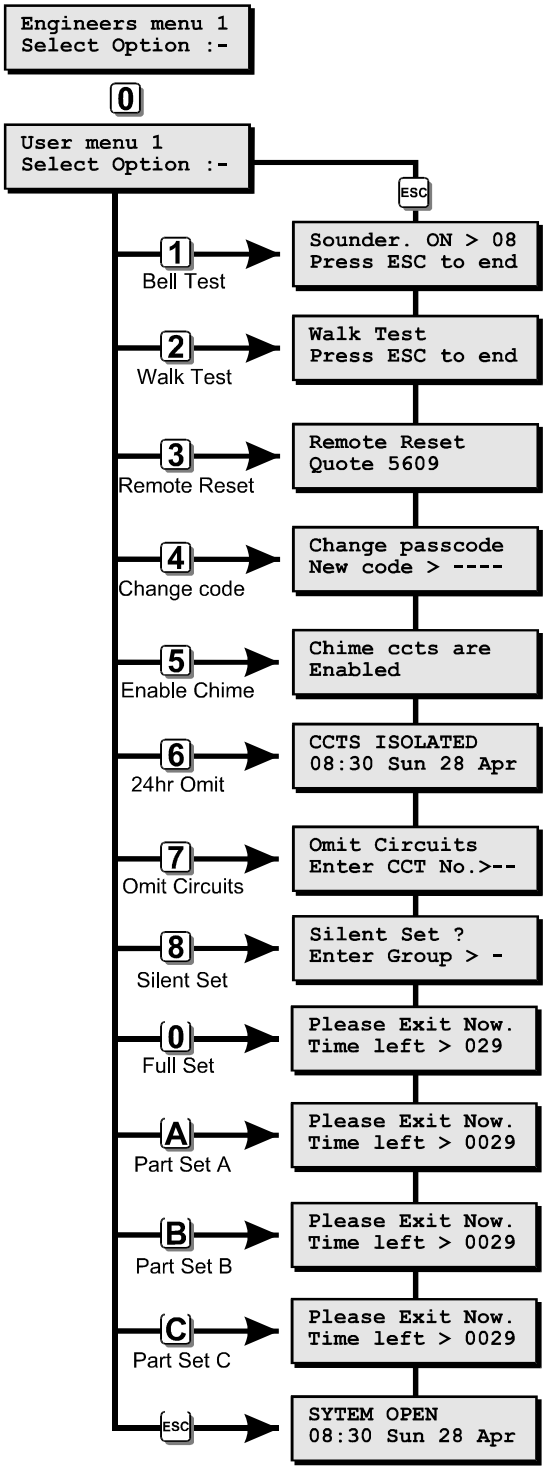
Configuration Flowchart

Goto User Menu 1 [1.0]

This option allows the engineer to access "User menu 1", the flowchart below shows the options within "User menu 1", for full details refer to the "Operators Manual".

Menu contents

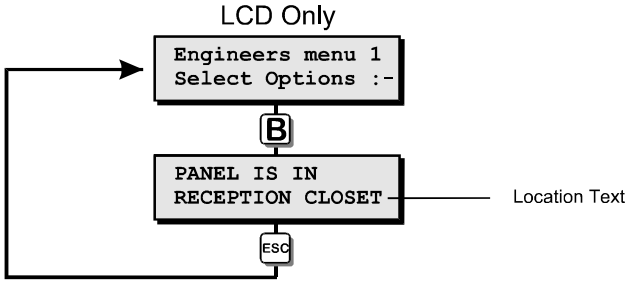
Hotkey	Option
1	Bell Test
2	Walk Test
3	Remote Reset
4	Change Passcode
5	Enable Chime
6	Omit 24hr Group
7	Omit Circuits
8	Silent Set
9	View Activity Count
0	Full Set
A	Part Set A
B	Part Set B
C	Part Set C



User Menu 1 Flowchart

View Location Text (LCD Only) [1.B]

This option allows the engineer to view the panel location text. The text message is programmed in "Engineers menu 3", see page 49.

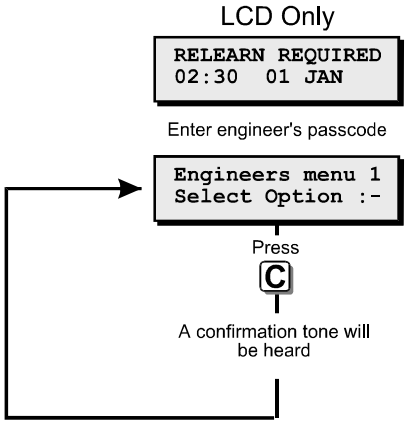


View Location Text

Relearn Hardware [1.C]

The engineer must use this option if they have changed the system hardware configuration while in engineer's mode, for example by adding or removing a remote keypad.

When the engineer tries to exit from engineer's mode the display shows "RELEARN REQUIRED". To clear this message re-select Engineers Menu 1 and press C. The system gives an acceptance tone and re-logs all current hardware. Confirm the new hardware by viewing the system log.



Relearn Hardware

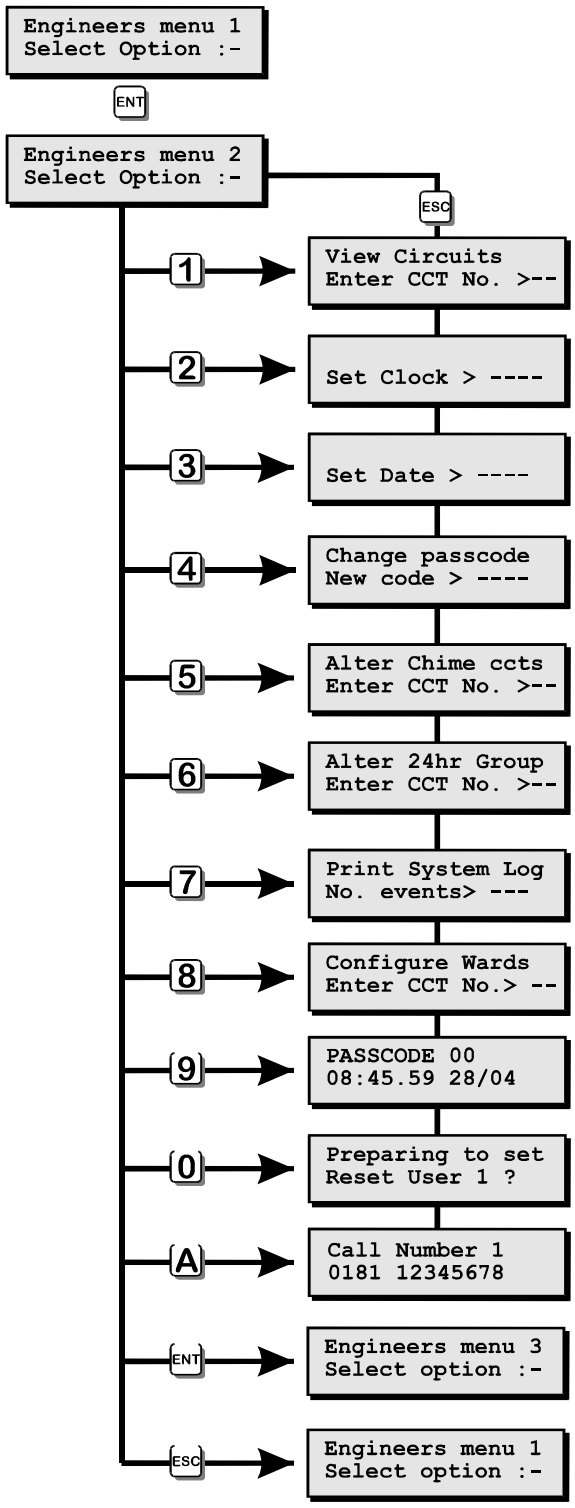
Engineers Menu 2

Introduction

Engineer's menu 2 is selected by pressing the [ENT] key whilst Engineer's menu 1 is selected. Each menu option can be selected by pressing the relevant "Hotkey".

Menu Contents

Hotkey	Option	Page
1	View Circuits	40
2	Set System Time	40
3	Set System Date	40
4	Change Passcode	40
5	Chime Circuits	41
6	Alter 24Hr Group	41
7	Print System Log	41
8	Configure Wards	41
9	View System Log	42
0	Reset User Code 1	44
A	Start Call Back	44

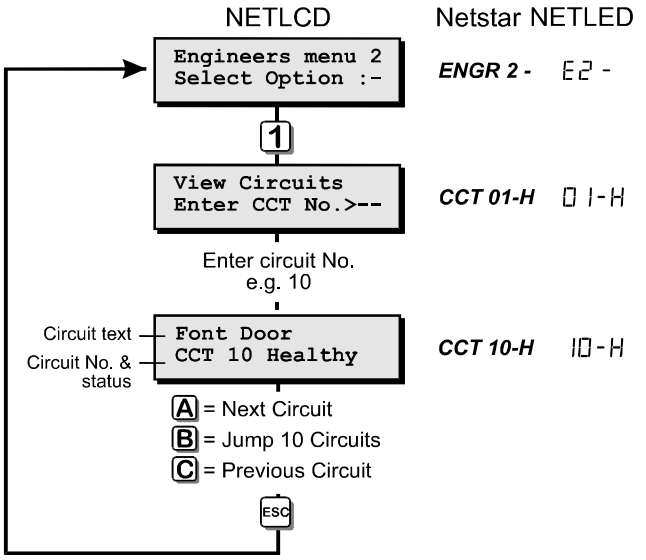


Engineer's Menu 2

View Circuits [2.1]

Each detection circuit may be viewed to ascertain its status. The circuit status conditions and resistance are shown below:

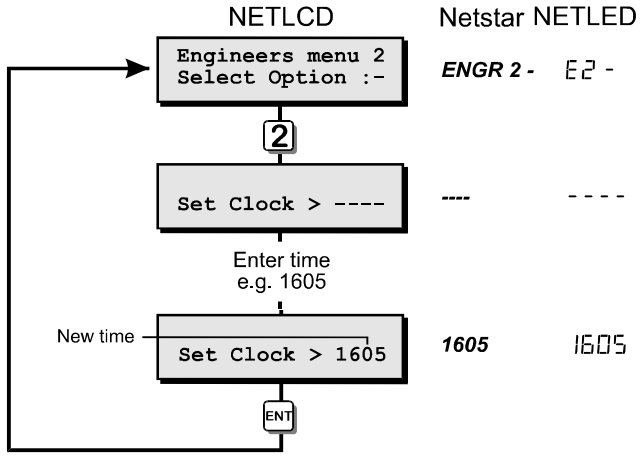
Status	Response	Normal	Min.	Max.
Healthy	None	2.2 KΩ	54 Ω	4.1KΩ
Active	Alarm	6.9 KΩ	4.1 KΩ	54 KΩ
Tamper	Tamper	∞	54 KΩ	∞
Shorted	Alarm	0 Ω	0 Ω	53 Ω



View Circuits Flowchart

Set System Time [2.2]

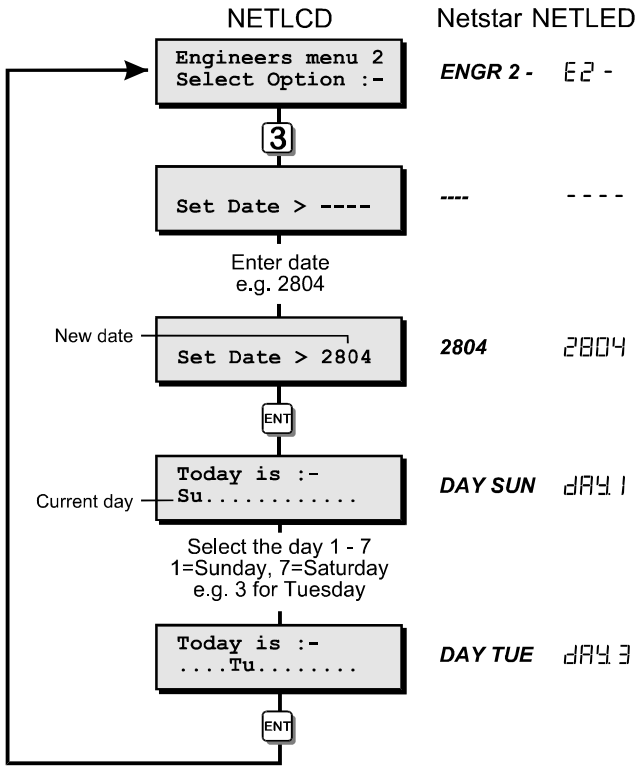
The system time is displayed in a 24hr format on all remote keypads and is also used to time stamp events in the system event log.



Set System Time Flowchart

Set System Date [2.3]

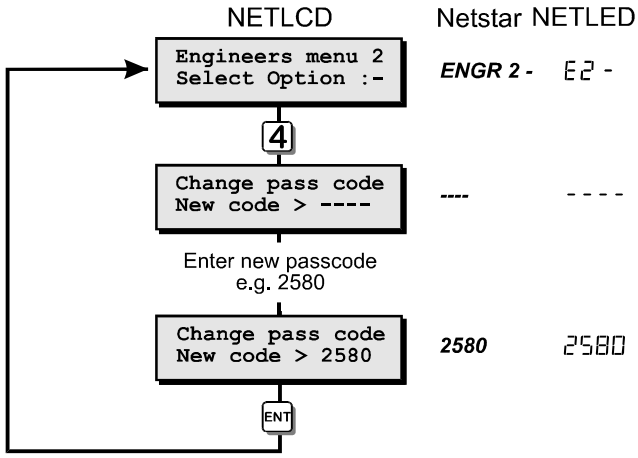
The system date is displayed in a day/date/month format on LCD remote keypads. it is also used to provide date stamps for events in the system log.



Set System Date Flowchart

Change Passcode [2.4]

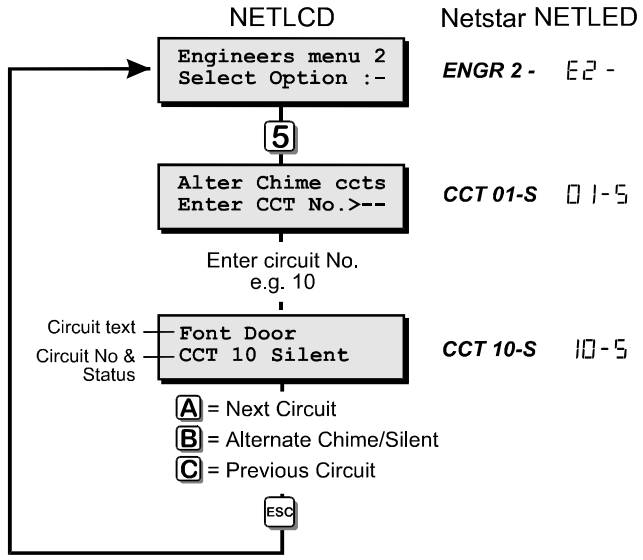
This option allows the engineer to change their passcode. The default passcode is 1234 but the installation engineer should change this to their own personal 4 digit passcode.



Change Passcode Flowchart

Chime Circuits [2.5]

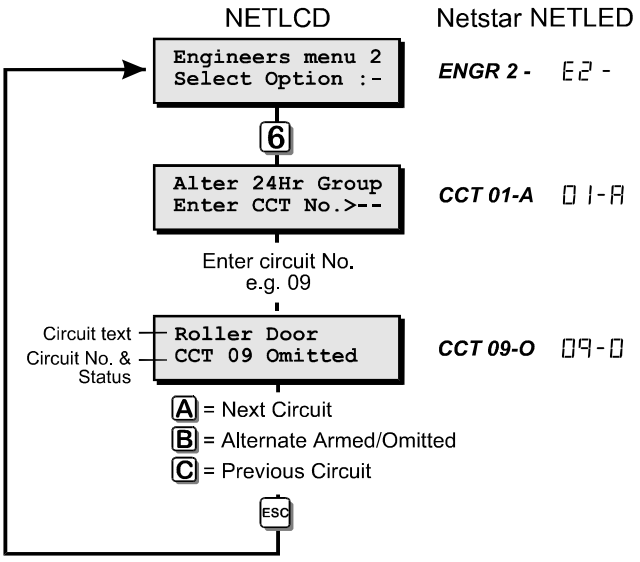
This option allows an alternative method of programming circuits as "chime".



Chime Circuits Flowchart

Alter 24Hr Group [2.6]

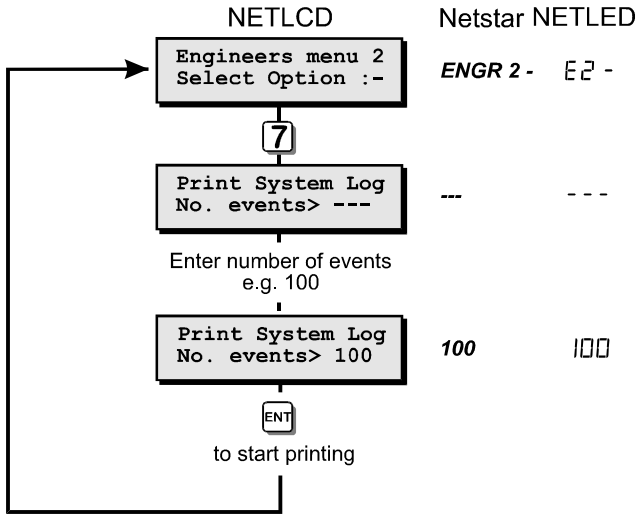
Circuit types "24hr" and "Auxiliary" with the "Omittable" attribute can be assigned to the 24hr group. The 24hr group is isolated by using user menu 1 option 6, see "User Manual".



Alter 24hr Group Flowchart

Print System Log [2.7]

The system log stores 700 events (1800 when expanded), if a printer is connected to the system it is possible to print a selected number of events. Once the printout has been started it can only be stopped by selected this option again and entering "000" for the number of events.



Print System Log Flowchart

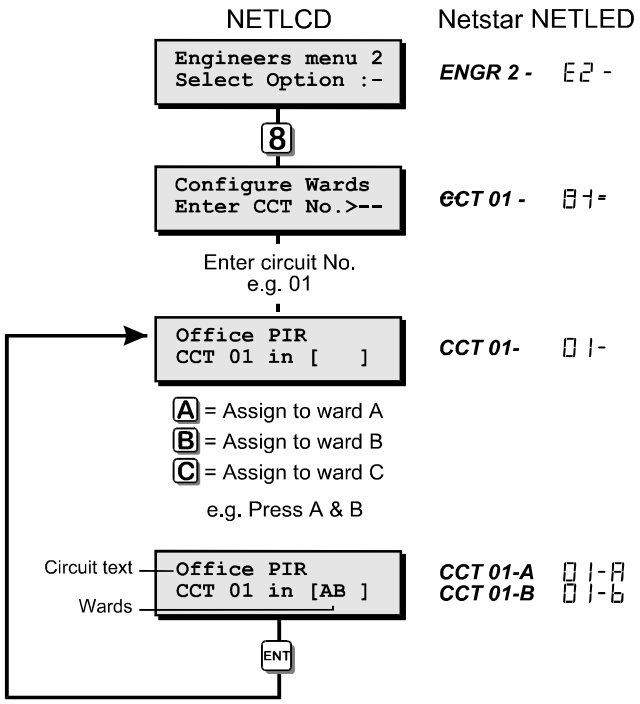
Configure Wards [2.8]

The TS790+ and TS900+ can be split into four wards (areas): System, A, B and C. Each ward can then be assigned to passcodes or part-set buttons. See "Part Set Groups" on page 47 and "Code Set Groups" on page 47.

Circuits can be assigned to more than one ward (system, A,B or C) thus creating overlapping areas. Circuits that are assigned to more than one ward will only be armed when both or all wards are set. *Note that this may mean that a user who sets one ward does not realise that some circuits are unset because they are shared with another unset ward, for example the system ward.*

Only "Night", "Final Exit" and "Exit terminator" circuit types can be assigned to wards A, B and C. From the factory, all detection circuits are assigned to the system ward (i.e., they are not assigned to wards A, B or C). Circuits that remain assigned to the system ward can also be set or unset independently.

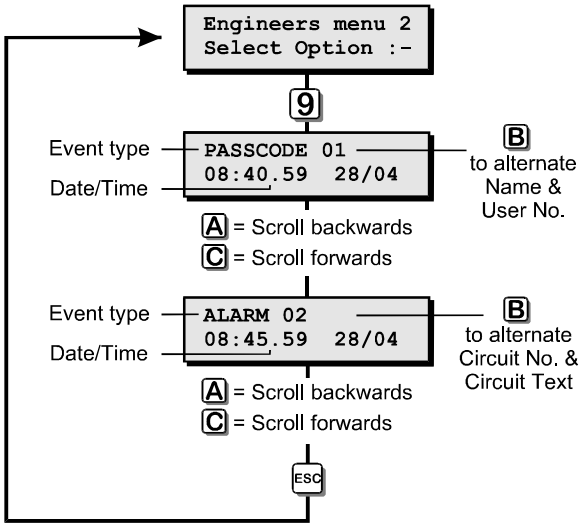
The master user can change the allocation of circuits to wards (see User Manual). To prevent this use Engineer Menu 1-09-01 (see page 34).



Configure Wards Flowchart

View System Log [2.9]

The engineer can use this option to view the system log. The [A] and [C] keys allow you to scroll backwards and forwards through the log events.



View System Log Flowchart

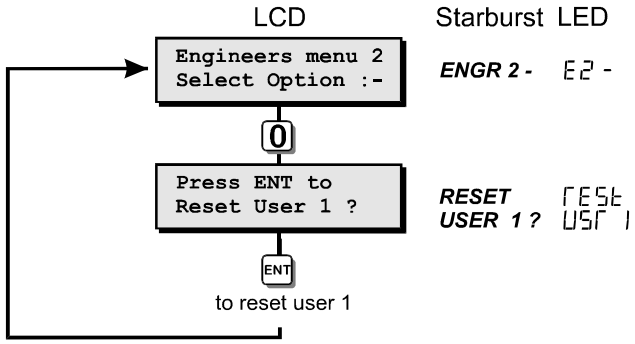
Log Event Codes

LCD	Starburst	LED	Description
ACTION ALARM	ALM SENT	AA	Bell output activated when system is part-set.
AC OFF	A.C. OFF	PF	Mains power removed.
AC RESTORED	A.C. ON	Pr	Mains power restored
ACCESS 01-31	ACC SS 01-31	Ac.01-31	Access user passcode (01-31) entered.
ALARM 01-56	ALARM 01-56	CA.01-56	Full alarm from circuit (01-56).
ALARM DELAYED 01-56	DELAY 01-56	Ad.01-56	Delayed alarm during a part-set condition.
AUX/BELL TAMPER	AUX TAMP	At	Auxiliary tamper activated.
AUXILIARY 01-56	AUX 01-56	Au.01-56	Auxiliary circuit activated.
BATTERY FAULT	BATT FLT	bF	Battery fault (voltage below 10.5V).
BELL TESTED	BELL TST	bt	External bell and strobes tested.
BELLS REARM			Time and date of bells reinstatement. Separate from System re-arm.
CALL BACK No. 01-03	C. BACK 01-03	Cb.01-03	Modem making a call back to remote PC.
CCTS ISOLATED	24HR OM T	C 1	24Hr group omitted during the unset condition.
CCT OMITTED	OMIT O 01-56	CO.01-56	Circuits omitted by the user at time of Setting.
CIRCUITS TESTED 01-56	TEST O 01-56	tc.01-56	The number of circuits tested during Walk Test.
CODE TAMPER	C.TMP 01-04	Pt.01-04	Code tamper from keypad 01-04
COMMS ACTIVE	COM ACT	cA	Plug-on digicom active.
COMMS FAILED	COMS FLT	cF	Plug-on digicom failed to communicate.
COMMS SUCCESSFUL	COMS OK	cc	Plug-on digicom communicated successfully.
DATE CHANGED	DATE CHG	dc	System Date changed.
DEFAULT CODE	DEFLT 01	dF	User passcode (01) reset to 5678 by the engineer.
DURESS 01-31	DUR SS 01-31	du.01-31	Duress alarm from user passcode (01-31).
ENTRY 01-56	ENTRY 01-56	En.01-56	Entry timer started by circuit (01-56).
ENTRY ALARM 01-56	EN.ALM 01-56	EA.01-56	Entry timed-out alarm from circuit (01-56).
FACTORY RESTART	FACT. RST	Fr	System "Factory Restarted".
FIRE ALARM 01-56	FIRE 01-56	FA.01-56	Fire alarm circuit activated.
FIRST KNOCK 01-56	FIRST 01-56	Fn.01-56	The first activation of a Double Knock circuit.
FUSE BLOWN 01	FUSE 01	Fb.01	Control Panel 12V Auxiliary Fuse blown.
INACTIVE CCTS 01-56	INACT 01-56	IA.01-56	Inactive circuits during the Unset condition.
KEY SWITCH 01-56	KEY.SW 01-56	Sa.01-56	Key switch operation from circuit (01-56).
LINE FAULT	LINE FLT	LF	Telephone line fault detected.
LINE RESTORED	LINE OK	Lr	Telephone line fault restored.
LOCKSET LOCKED			Lock switch placed in "locked" position.
LOCKSET UNLOCKED			Lock switch placed in "unlocked" position.
MODEM LOCK-OUT	LOCK-OUT	LO	Modem failed to communicate.
NO EVENT	NO EVENT	--	No log event.
NODE ADDED 01-05	N.ADD 01-05	nA.01-05	Node added to the system.
NODE FUSE 01-05	N.FUSE 01-05	nF.01-05	Node fuse blown.
NODE REMOVED 01-05	N.REM 01-05	nr.01-05	Node removed from the system.
NODE TAMPER 01-05	N.TMP 01-05	nt.01-05	Node cover removed.
ON-SITE RESTART	SITE. RST	Sr	System "On-Site" restart.
OMITS REMOVED	OMIT REM	Or	Previously omitted circuits reinstated.
PA ALARM 01-56	PA.ALM 01-56	PA.01-56	Panic Alarm circuit activated.
PA CODE 01-31	PANIC 01-56	PC.01-31	Panic Alarm passcode entered.
PANEL LID TAMPER	LID TAMP	Lt	Control panel lid removed.
PART SET A/B/C	P.SET A/B/C	PS.A/b/C	System Part-Set using one of the A, B, or C buttons.
PASSCODE 00-31	USER 00-31	Ur.00-31	User passcode entered. (00-31).
PSU OVERLOAD	OL	OL	Power suppy current exceeded.
REINSTATEMENT			Time and date for reinstatement.
REMOTE ADDED 01-04	R. ADD 01-04	rA.01-04	Remote Keypad added to the system.
REMOTE RESET	REM RST	rc	System reset by "Remote Reset" passcode.
REM REMOVED 01-04	R. REM 01-04	rr.01-04	Remote Keypad removed from system.
REM SERVICE CALL	R.S. CALL	SC	Remote service call via "Lineload" software and PC.
REM TAMPER 01-04	R. TMP 01-04	rt.01-04	Remote Keypad cover removed.
SERVICE CALL END	R.S. END	SE	Remote service call finished.
SERVICE REQUIRED	SERVICE	rS	Service required
SET FAIL	SET FAIL	SF	System failed to Set.
SET WARD A/B/C/S	W. SET A/B/C/S	St.AbCS	Wards A, B, C or System Set.
SYSTEM OPEN	SYS OPEN	OP	System fully unset.

LCD	Starburst	LED	Description
SYSTEM RE-ARMED	RE-ARMED	rA	System re-armed all healthy circuits.
SYSTEM SET	FULL SET	FS	System fully set.
TAMPER 01-56	TAMP R 01-56	tA.0 1-56	Tamper alarm from circuit.
TEST CCTS OFF	TEST OFF	to	All circuits taken off "Test"
TEST FAIL 01-56	T. FAIL 01-56	tF.0 1-56	Circuit failed during "Test".
TIME CHANGED	TIME CHG	tc	System time changed
UNSET WARD A/B/C/S	UNSET A/B/C/S	UnAbCS	Wards A, B, C or System Unset.
WALK TEST	WALK TST	ct	System "Walk Test" selected.

Reset User Code 1 [2.0]

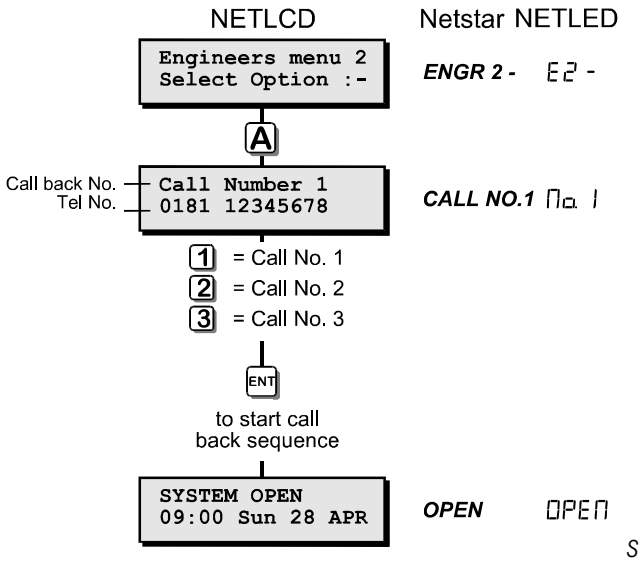
This option allows the installation engineer to reset the master user (user 01) back to the factory default code of "5678". This feature is useful when the master user has forgotten their passcode or has accidentally changed it without realising. This operation is logged.



Reset User Code Flowchart

Start Call Back [2.A]

If the system is fitted with a DC58M digi-modem, it is possible for the installation engineer to initiate an upload sequence to a remote site (normally the alarm company). Once the communication link is established with the remote site, data can be sent and received from the control panel. This feature is only compatible with Menvier Lineload software version 2.2 or above.



tart Call Back Flowchart

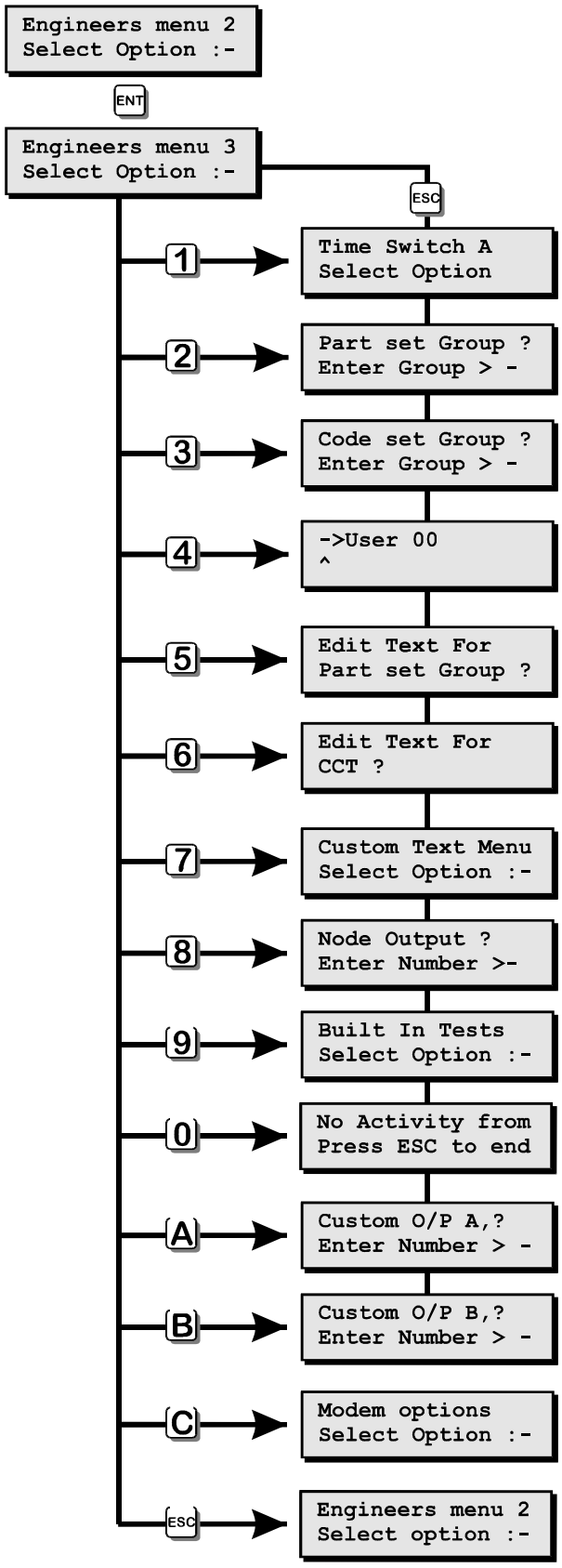
Engineer's Menu 3

Introduction

Engineers menu 3 is selected by pressing the [ENT] whilst Engineers menu 2 is selected. Each menu option can be selected by pressing the relevant "Hotkey".

Menu Contents

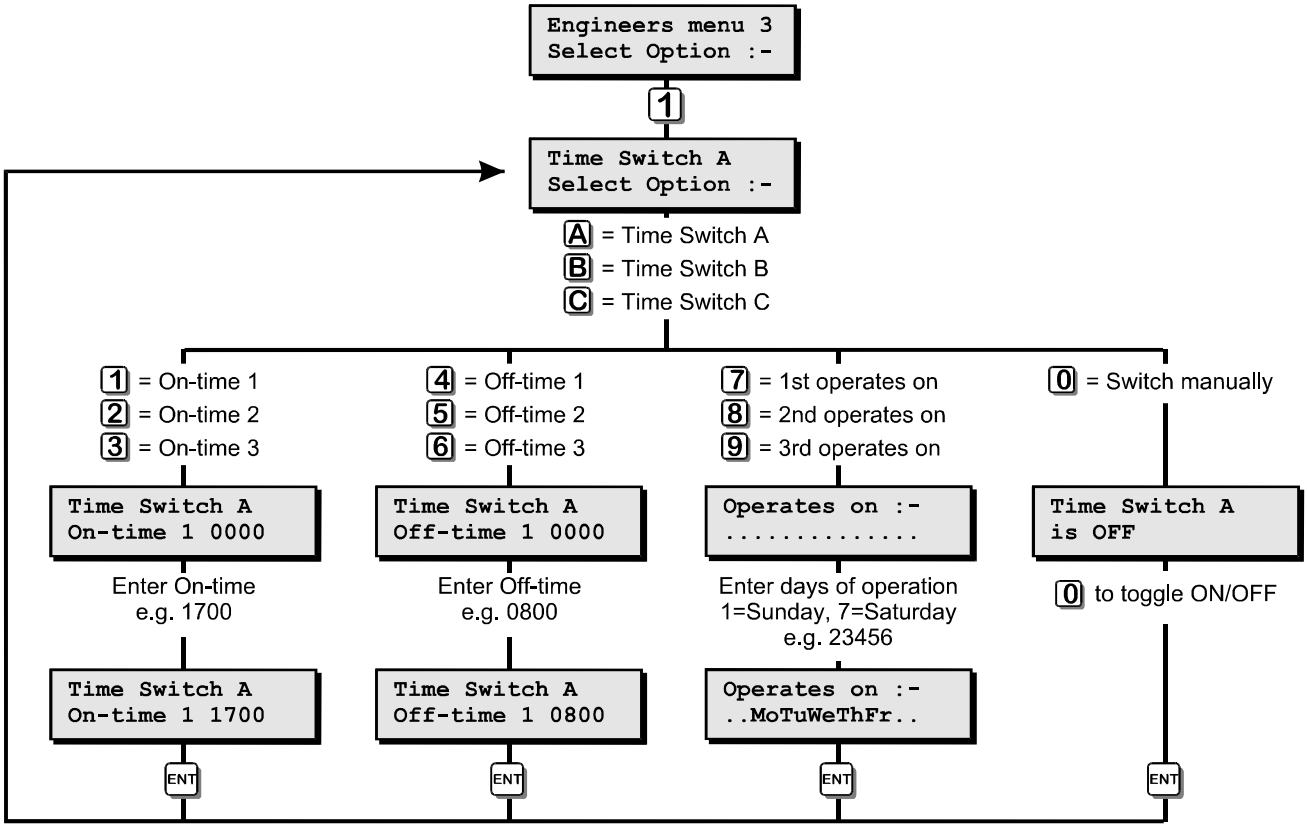
Hotkey	Option	Page
1	Program Time Switches	46
2	Program Part Set Groups	47
3	Program Code Set Groups	47
4	Edit Engineers Name	48
5	Edit Part Set Text	48
6	Program Circuit Text	48
7	Custom text Menu	48
8	Program Node Outputs	49
9	Built In Test Menu	49
0	View Activity Count	50
A	Program Custom Output A	51
B	Program Custom Output B	51
C	Modem Options	52



Engineers Menu 3

Time Switches [3.1]

The TS790+/TS900+ has three programmable time switches. Each time switch can be programmed with up to three separate on/off times and made to operate on any day of the week. The time switches can be assigned to outputs which in turn can be used to control internal or external lighting via a relay etc.



Time Switches Flowchart

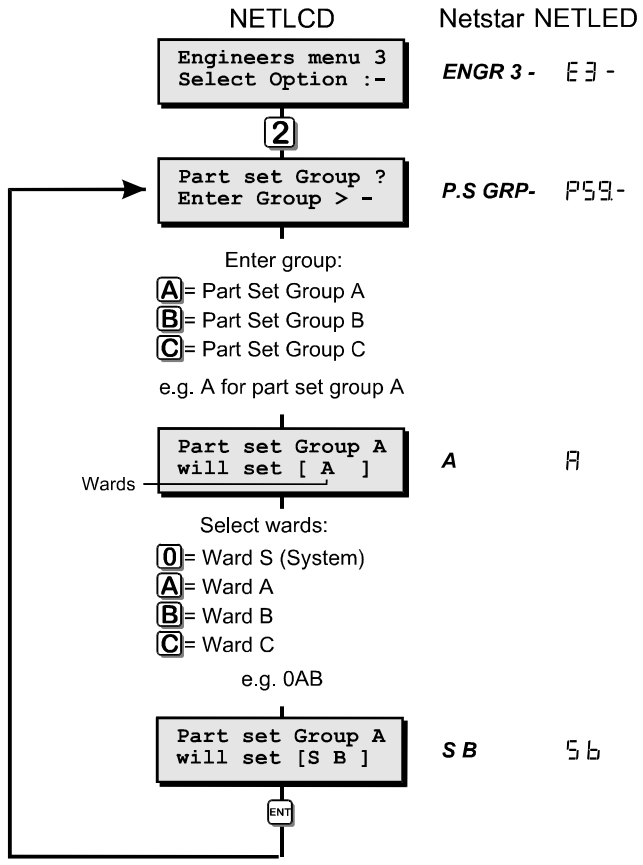
Part Set Groups [3.2]

This option allows the engineer to define how the three part set buttons operate. Each group can be programmed so that it sets any combination of wards. For example "PART SET GROUP A" could be allocated wards A and C, whereas "PART SET GROUP B" could be allocated wards A and B.

Each "Part Set Group" can also have up to 32 characters of text assigned, *see "Part Set Text" on page 48.*

Part Set Group Operation

When a "Master" or "Standard" user passcode is entered during the unset mode the system will attempt to fully set after a five second delay. However, if during the five second delay one of the part set buttons [A], [B] or [C] is pressed, the display will show relevant "Part Set Text" and after a short delay the system will set the wards that are assigned to the selected "Part Set Group".



Part Set Groups Flowchart

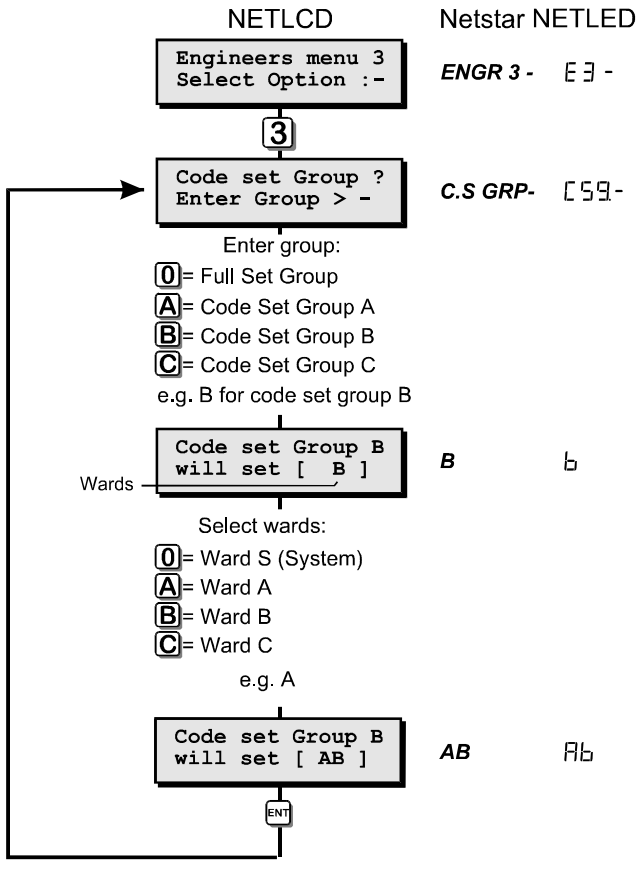
Code Set Groups [3.3]

This option allows the engineer to define how the four code set groups operate. Each group can be programmed so that it sets any combination of wards. For example "CODE SET GROUP A" could be allocated wards A and C, whereas "CODE SET GROUP B" could be allocated wards A and B.

Code Set Group Operation

When the system is unset and a "Code Set Group" passcode is entered the selected wards will set after the setting procedure is followed. e.g., If "Code Set Group A" is defined as above then when the passcode is entered it will set wards A and C. If the system is fully set and the passcode is entered it will unset wards A and C.

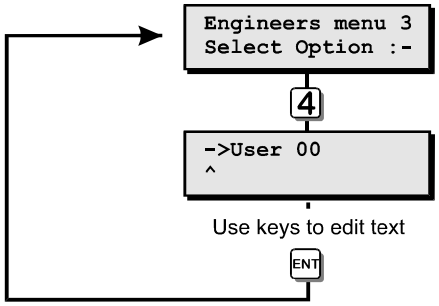
The "Code set Group" passcodes are programmed by the master user within "User menu 2" (see User Manual).



Code Set Groups Flowchart

Engineers Name (LCD Only) [3.4]

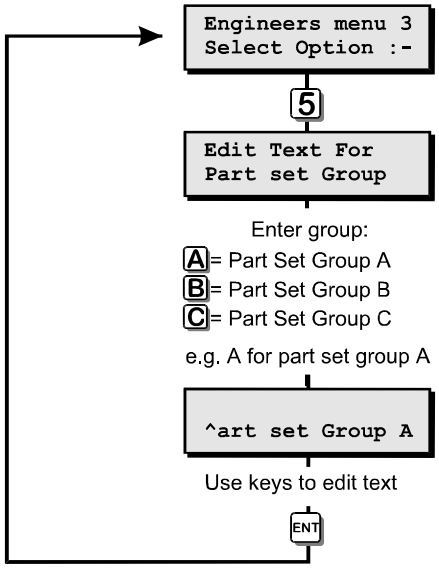
This option allows the engineer to assign a name (7 characters) to user 00. When using the view log option you can press the [B] key to alternate between displaying the user number and user name.



Engineer's Name Flowchart

Part Set Text (LCD Only) [3.5]

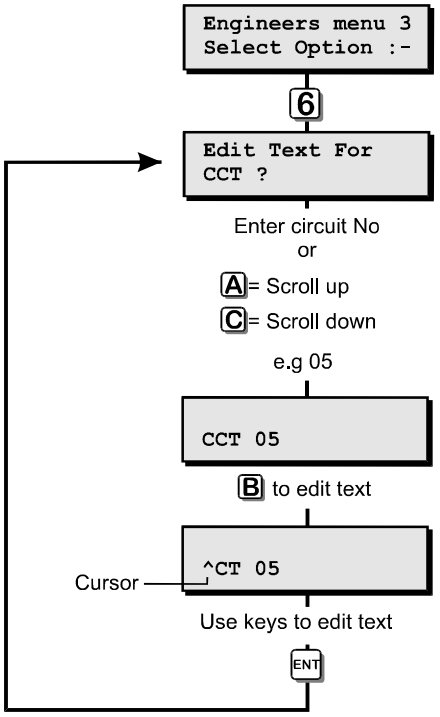
This option allows the engineer to assign 32 characters of text to each part set group. When the user selects the part set options during setting, the display will show the relevant part set text.



Part Set Text Flowchart

Circuit Text (LCD Only) [3.6]

Each detection circuit can have up to 16 characters of text assigned to it.



Circuit Text Flowchart

Custom Text Menu (LCD Only) [3.7]

This menu option allows the installation engineer to edit the following text messages:

Reset Message

The default reset message "CALL ENGINEER TO RESET SYSTEM" can be personalised by the engineer, e.g. the message may be programmed to read "CALL XYZ ALARMS ON 0181-1234567".

Banner Message

Normally when the system is unset the bottom line of the display shows the time and date, and the top line is left blank. This menu option allows the engineer to program or edit a 16 character "Banner" message which is displayed on the top line. This may be used to display the company's name, e.g., "Blogg Alarms", "ABC Security" etc.

Location Text

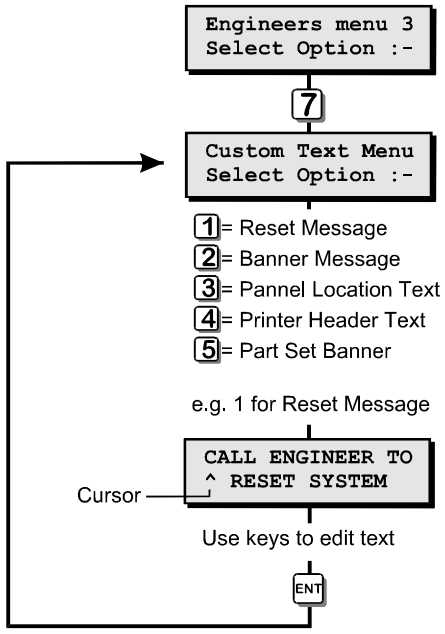
This option allows the engineer to program a 32 character location message. When "Engineers menu 1" is selected the engineer can view this message. This can be used to provide the location details for the control panel, e.g., "C P located in reception area", thus assisting service engineers unfamiliar with the site.

Printer Header

This option allows the installation engineer to program a 32 character printer header message. This is printed whenever a system or log printout is taken from the system. This can be used as a site reference, e.g., "ABC Company Job No123456".

Part Set Banner

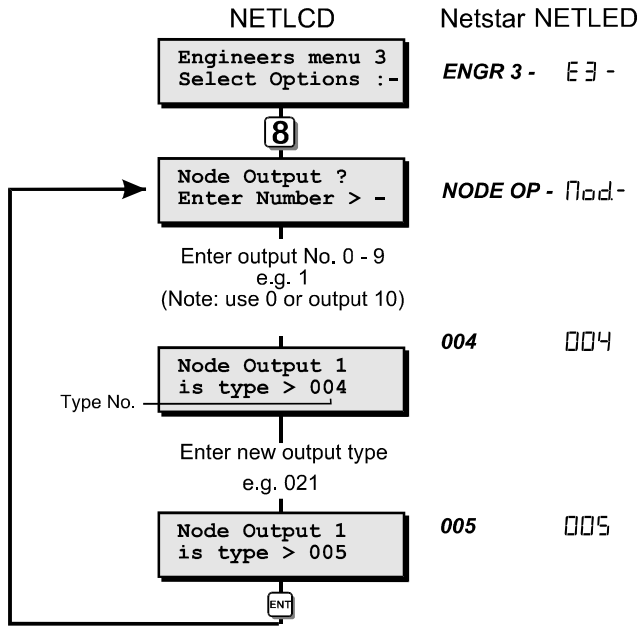
The part set banner is a 16 character message displayed on the top line of the display whenever the system is part set. If the message is left blank the top line of the display will show the wards that are set. If the message is programmed the top line of the display will show the message, e.g., "System Part-Set".



Custom Text Menu

XNode Outputs [3.8]

This option allows the engineer to program the two outputs on each XNode. Each output can be programmed to any of the output types, see page 25.



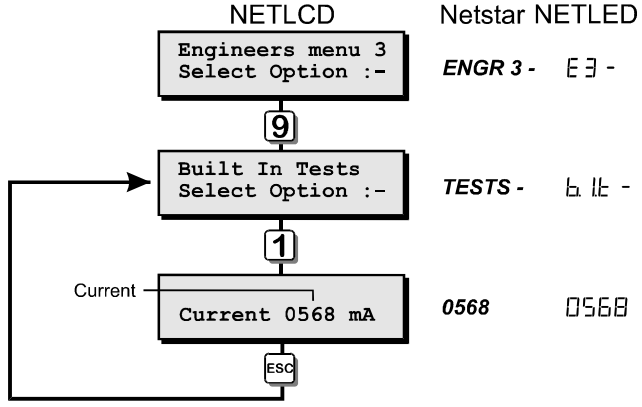
XNode Outputs Flowchart

Built In Tests [3.9]

The TS790+/TS900+ system has the following diagnostic routines:

Current Consumption

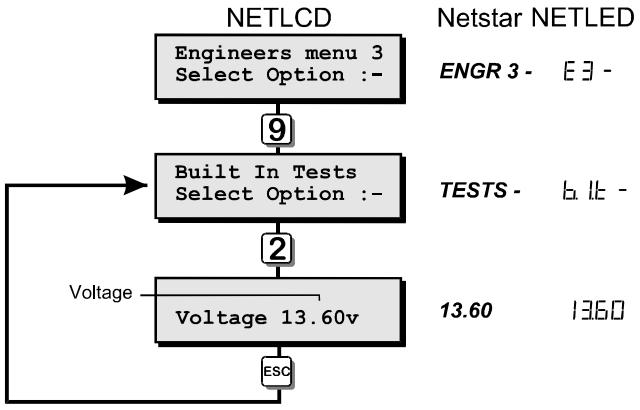
This option displays the total current consumption for the system on mains power accurate to ± 50mA. Note that the system cannot display battery only current consumption.



System Current Flowchart

Voltage

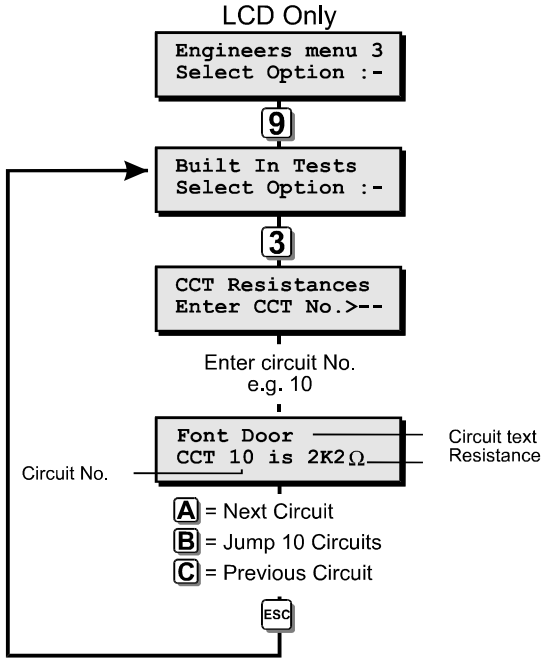
When this test option is selected the battery charging voltage at the control panel is displayed, the accuracy of this measurement is ± 0.2V.



System Voltage Flowchart

View Circuit Resistance (LCD Only)

When this test routine is selected the resistance for each detection circuit may be measured, the accuracy of this measurement is ± 0.1 KOhms.



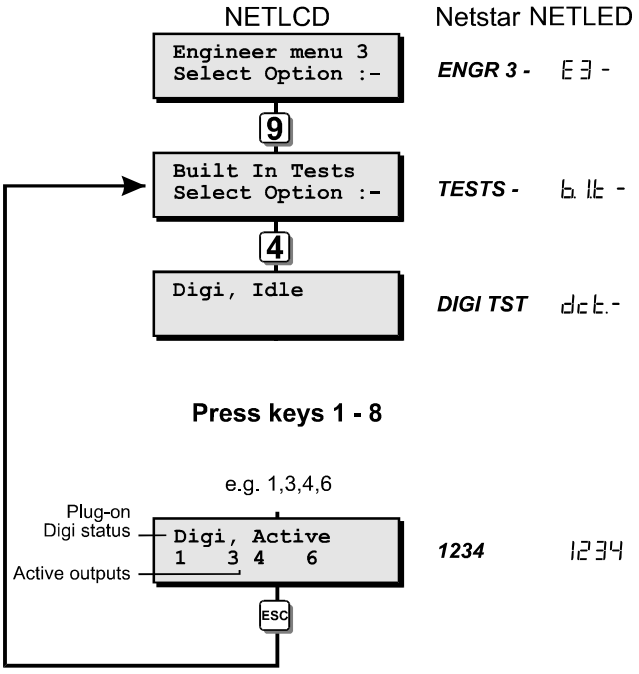
View Circuit Resistances

Test Digi Outputs

This test routine allows any outputs or digi channels that have been programmed as "FIRE", "P.A.", "ALARM" and "SET" to be tested.

If the system is fitted with a plug-on digicom the top line of the display will show the status of the communicator.

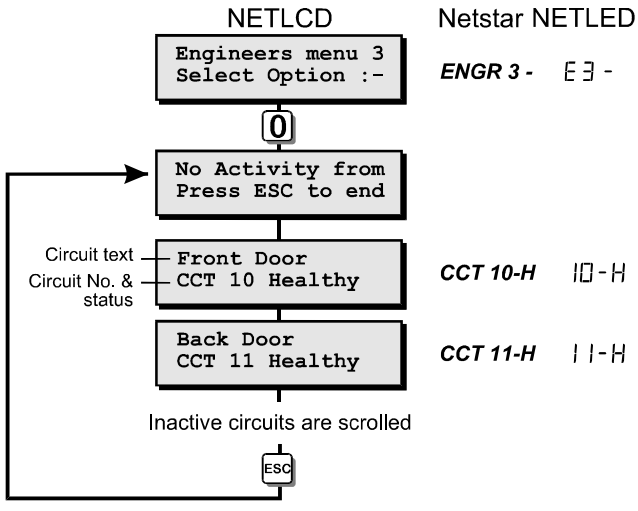
When you leave this test routine the digi channels and outputs are returned to their normal condition.



Test Digi Outputs Flowchart

View Inactive Circuits [3.0]

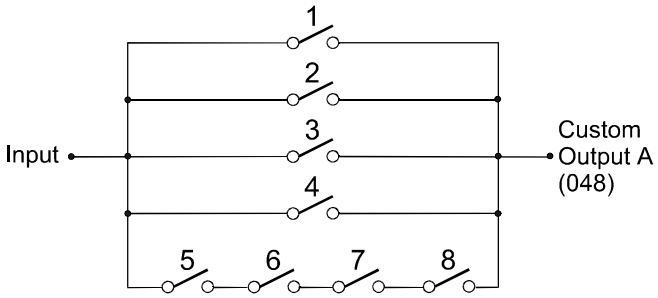
Circuits with the "Flagged" attribute that have not been activated whilst the system was unset can be viewed using this menu option, see "Circuit Attributes" for full details on page 29.



View Inactive Circuits Flowchart

Custom Outputs A & B [3.A/B]

These options allows the engineer to program both custom outputs. The diagram below represents the logic circuit for the custom output.



Each switch in the diagram represents a programmable output type, therefore the custom output will only activate when the correct combination of output types are active.

Switches 1 - 4 perform a logical "OR" function and switches 5 - 8 perform a logical "AND" function.

Custom Output - Example 1

This example shows how the "OR" function can be used so that the "Custom Output" activates when circuit 0001 or 0005 or 0016 causes an alarm condition. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	Circuit 001 Alarm	5	Always Off
2	Circuit 0005 Alarm	6	Always Off
3	Circuit 016 Alarm	7	Always Off
4	Always Off	8	Always Off

♦ *When using the "Custom Output" for "OR" logic only, all unused switches must be programmed to the type "Always Off".*

Custom Output - Example 2

This example shows how the "AND" function can be used so that the "Custom Output" only activates when the system is ward A is set and time switch A is active. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	Always Off	5	Ward A Set
2	Always Off	6	Time Switch A
3	Always Off	7	Time Switch A
4	Always Off	8	Time Switch A

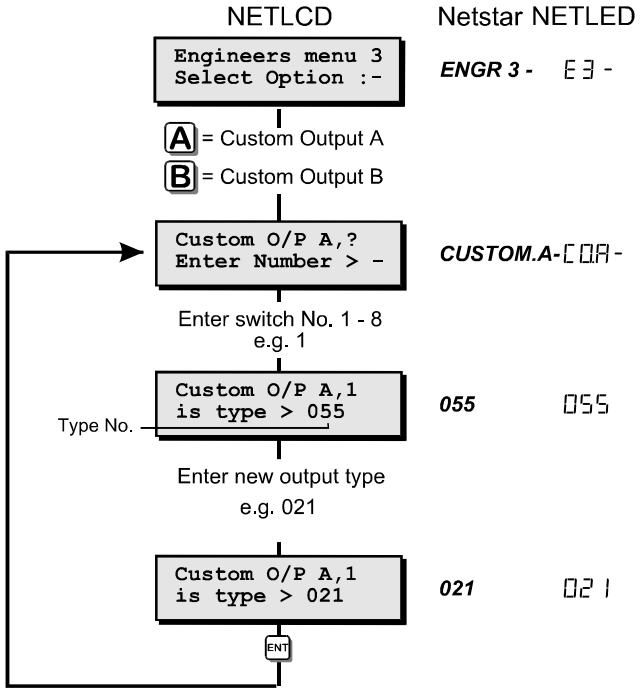
♦ *When using the "Custom Output" for "AND" logic only, switches 1-4 must be programmed to the type "Always Off" and any of the unused "AND" switches must be programmed to the same type as one of the used switches.*

Custom Output - Example 3

This example shows how to use both the "AND" and "OR" functions so that the "Custom Output" activates when ward A is set and time switch A is active or when the courtesy light output is active. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	Courtesy Light	5	Ward A Set
2	Always Off	6	Time Switch A
3	Always Off	7	Time Switch A
4	Always Off	8	Time Switch A

♦ *When using the "Custom Output" for "AND" and "OR" logic, any of the unused "OR" switches must be programmed to the type "Always Off" and any of the unused "AND" switches (5-8) must be programmed to the same type as one of the used switches.*



Custom Outputs Flowchart

Modem Options (LCD Only) [3.C]

This option allows the engineer to access the following modem options:

Call Back No.1

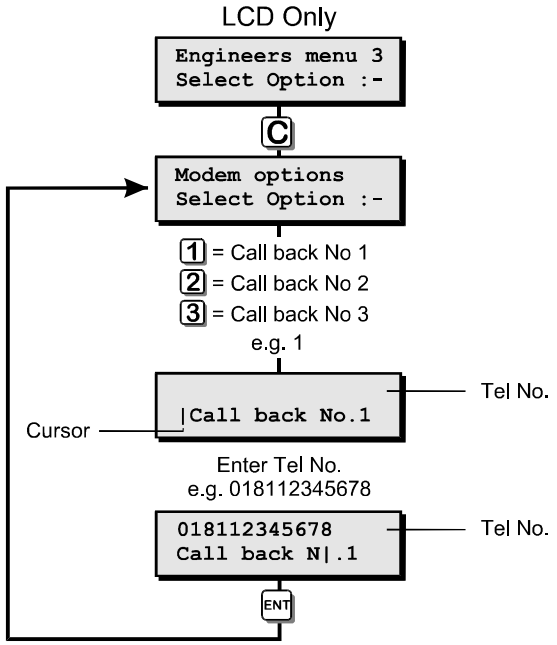
This option allows the first call back telephone number to be programmed.

Call Back No.2

This option allows the second call back telephone number to be programmed.

Call Back No.3

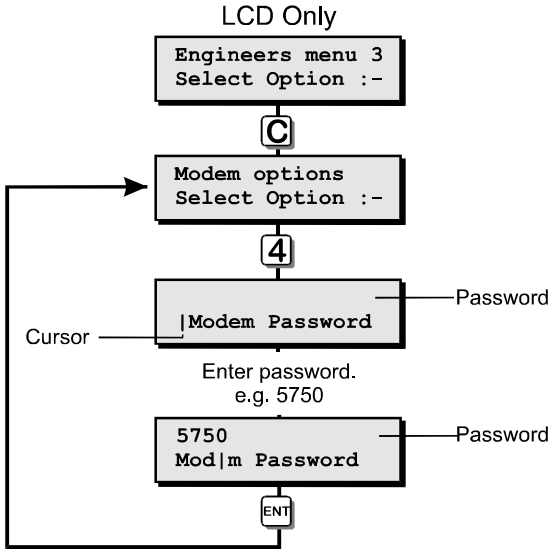
This option allows the third call back telephone number to be programmed.



Modem Call Back Numbers Flowchart

Modem Password

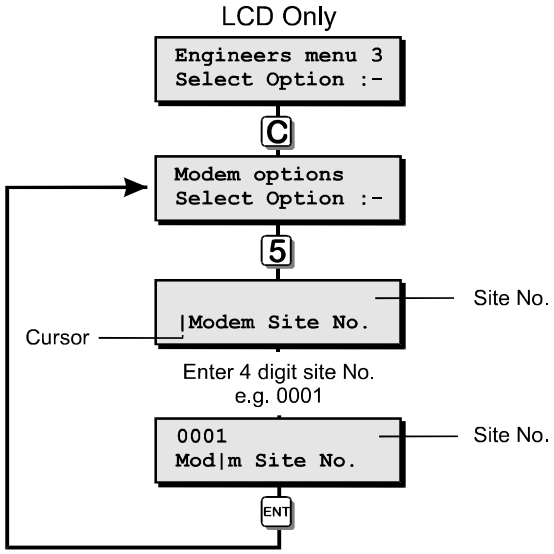
This option allows the modem password to be programmed. The "Modem Password" can be up to 16 character long and provides a means of security for remote communications. When using the "Lineload" software the "Modem Password" in the site profile must match the "Modem Password" that is stored in the control panel.



Modem Password Flowchart

Modem Site No.

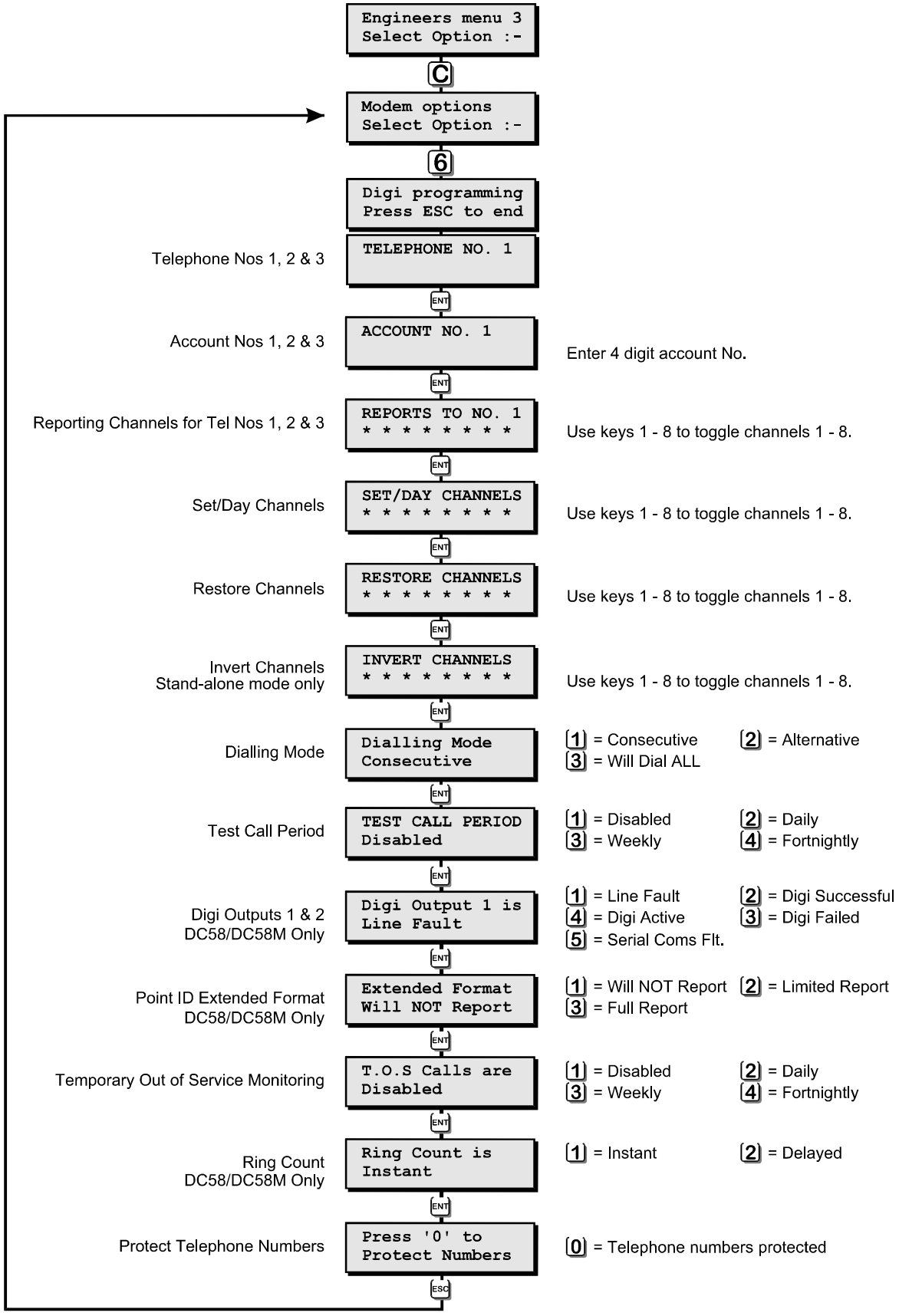
This option allows the Modem site number to be programmed. The "Modem Site No." is a 4 digit number that is used as a site reference. When using the "Lineload" software the "Site Reference" number in the site profile must match the "Modem Site No." that is stored in the control panel.



Modem site Number Flowchart

Program Digicom

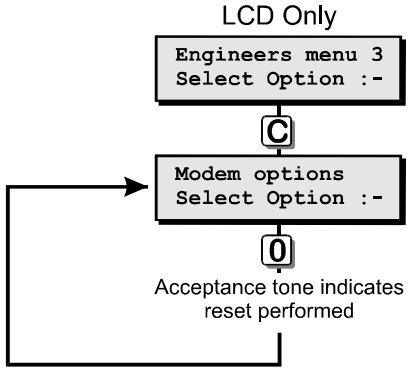
This option allows the plug-on digicoms DC54, DC58 and DC58M to be programmed via the control panel.



Program Digi Flowchart

Reset Digicom

When the system is powered up, the control panel logs-on the device that is connected to the digicom plug (JP3). If the device is changed or removed from the system you must either power the system down and back up again, or select this menu option in order for the device to be log-on again.



Reset Digicom Flowchart

Appendices

Contact ID Extended Reporting

Contact ID extended reporting is a new format which when used with the DC58 or DC58M can be used to report circuit ID data, user ID etc. In order to used this format the DC58/DC58M must be plugged on to the control panel and must also be programmed to report "Extended Format" *(refer to the instructions supplied with the DC58/DC58M).* The central station alarm receiver must also be capable of receiving "Contact ID extended Format".

Contact ID Reporting takes the following format: CCCC Q EEE GG ZZZ where:

CCCC
Customer account number.
Q
Event qualifier, where E = new event (1) and R = restore (3).
EEE
Event code (see table below).
GG
Always 00.
ZZZ
Circuit/Contact ID number reporting the alarm (001-056), or user number (001-031) for open/close reports. System status messages (Mains Fail, Walk Test, etc.) contain zeros in the ZZZ location.

Code	Description
110	Fire alarm
120	Panic (PA Code) alarm
121	Duress alarm
122	Silent PA alarm
123	Audible PA alarm
130	*Intruder alarm
134	Entry alarm
135	24 Hour alarm
137	Equipment tamper alarm
139	Confirmed alarm
150	Auxiliary alarm
301	Mains failure
302	Low system battery
305	System reset (on-site or factory)
309	Battery test failure
382	Node or Remote removed
401	Open / Close by user
406	Alarm cancelled
409	Open / Close by keyswitch
411	Call-back requested (Lineload)
412	Successful download access
413	Unsuccessful download access
465	Restore PA
570	Circuits omitted
572	24 Hour circuits omitted
573	Cct "Actively" omitted
627	Engineer program mode selected
628	Engineer program mode cancelled

Contact ID Event Codes

*Becomes CCT Tamper if Engineer menu 1.9 option 30 is set to "Tamper is Burg".

Resetting the Engineers passcode

If the installation engineer has inadvertently changed the engineers passcode or the passcode has been forgotten, the passcode can be reset back to 1234 without losing any other programmed data. This procedure can only be used providing a user passcode is available:

1. Ensure that the system is unset and a user passcode is available.
2. Remove the cover from the control panel, this will cause a "Panel Lid tamper" alarm.
3. Ask the user to enter their passcode to silence the alarm.
4. Place the blade of a small screwdriver between the pins labelled "FACTORY RESET". A multi-tone sound indicates the engineers passcode has been reset.
5. Replace the control panel cover. At the remote keypad enter 1234. The display will show "Engineers Menu 1". To change the engineer's passcode *see "Change Passcode" on page 40.*

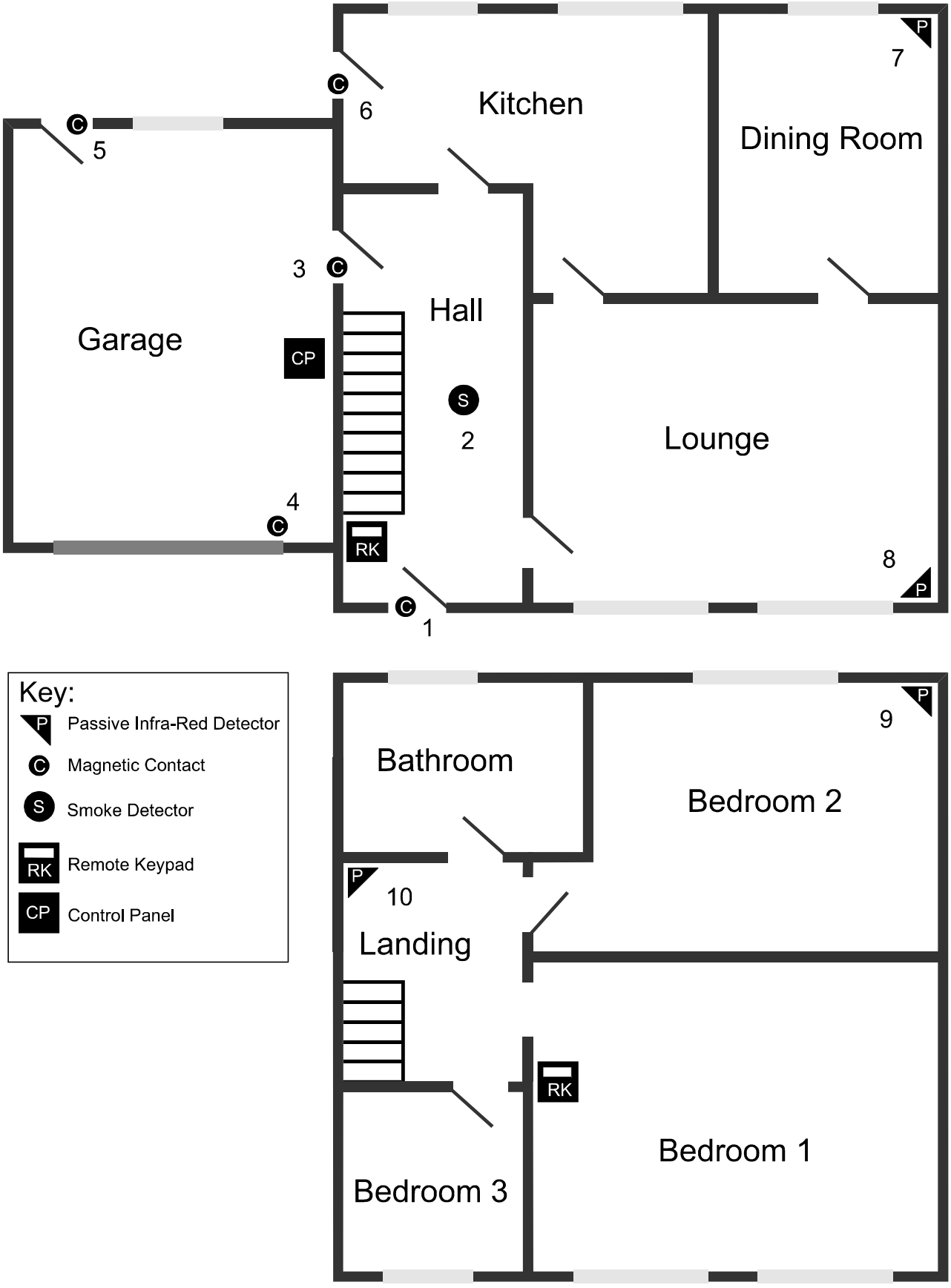


Figure 26. A Typical 3 Bedroom House

Domestic Part-Set Application Example

The TS790+/900+ is very flexible in the way that the system can be part-set. The system may be part-set by using the part-set buttons on the remote keypad or by using a part-set passcode.

The first application example shows how to use the part-set buttons to set different areas of a 3 bedroom house. The second example will show how to achieve the same results using a different approach. Try both and use the one you are happier with.

Defining Part-Set buttons to Omit a Ward

This is probably the easier method of configuring the part-set groups as you can easily take the information from a table and translate it directly into the ward programming details.

Using the drawing of a typical 3 bedroom house, the following part-set arrangements are required:

Part Set A	Downstairs perimeter detection armed and downstairs internal detection armed.
Part Set B	Downstairs perimeter detection armed, downstairs internal detection armed and bedroom 2 armed.
Part Set C	Downstairs perimeter detection armed.

1. First create a table listing the circuits that are required to be Armed (A) and Omitted (O) for each part-set requirement:

Circuit	Location	P-Set A	P-Set B	P-Set C
01	Front Door	A	A	A
02	Smoke Detector	A	A	A
03	Hall door to garage	A	A	A
04	Garage door	A	A	A
05	Garage back door	A	A	A
06	Kitchen door	A	A	A
07	Dinning room PIR	A	A	O
08	Lounge PIR	A	A	O
09	Bedroom 2 PIR	O	A	O
10	Landing PIR	O	O	O

2. From the above Table create a second Table that details the ward assignment for each circuit. The rules for generating the second table are as follows:
   (a) Circuits that are armed in all three part set groups can be considered as being assigned to the "System Ward" and are NOT assigned to wards A, B or C.
   (b) Circuits that are omitted are assigned to their respective ward, e.g., circuit 09 is omitted for part set A and C, therefore it must be assigned to wards A and C.
3. The completed Table should look like the table shown below. Circuits with no ticks are assigned to the System Ward:

Circuit	Location	Ward A	Ward B	Ward C
01	Front Door			
02	Smoke Detector			
03	Hall door to garage			
04	Garage door			
05	Garage back door			
06	Kitchen door			
07	Dinning room PIR			✔
08	Lounge PIR			✔
09	Bedroom 2 PIR	✔		✔
10	Landing PIR	✔	✔	✔

4. From the above Table assign circuits 01-10 to their relevant wards *(see "Configure Wards" on page 41).*
5. Program the Part set groups *(see "Part set Groups", on page 47*). This ensures that when the user selects button A, B or C the system omits the correct ward. When using this method, the part set groups MUST be programmed as follows:
   Part Set Group A = [S BC] (Omits Ward A)
   Part Set Group B = [SA C] (Omits Ward B)
   Part Set Group C = [SAB] (Omits Ward C)

   - ***When defining part set groups it is important to remember that circuits assigned to more than one ward will only be armed when all the wards its assigned to are set. e.g., the Landing PIR will only be armed when ward A, B and C are set (i.e., Full set in our example).***

Defining Part-Set buttons to Arm a Ward(s)

This method of defining the part set groups requires you to think of the system in terms of separate areas of protection (Wards), then configuring the part set groups so that different combinations of wards are set.

1. From the previous part-set requirements assign the different physical areas to wards, e.g.:

Ward A: Downstairs perimeter detection (Circuits 01,04, 05 & 06).

Ward B: Downstairs Internal detection (Circuits 03, 07 & 08).

Ward C: Bedroom 2 (Circuit 09).

2. Using the above ward requirements create a Table for assigning circuits to wards. Circuits with no ticks are assigned to the "System Ward":

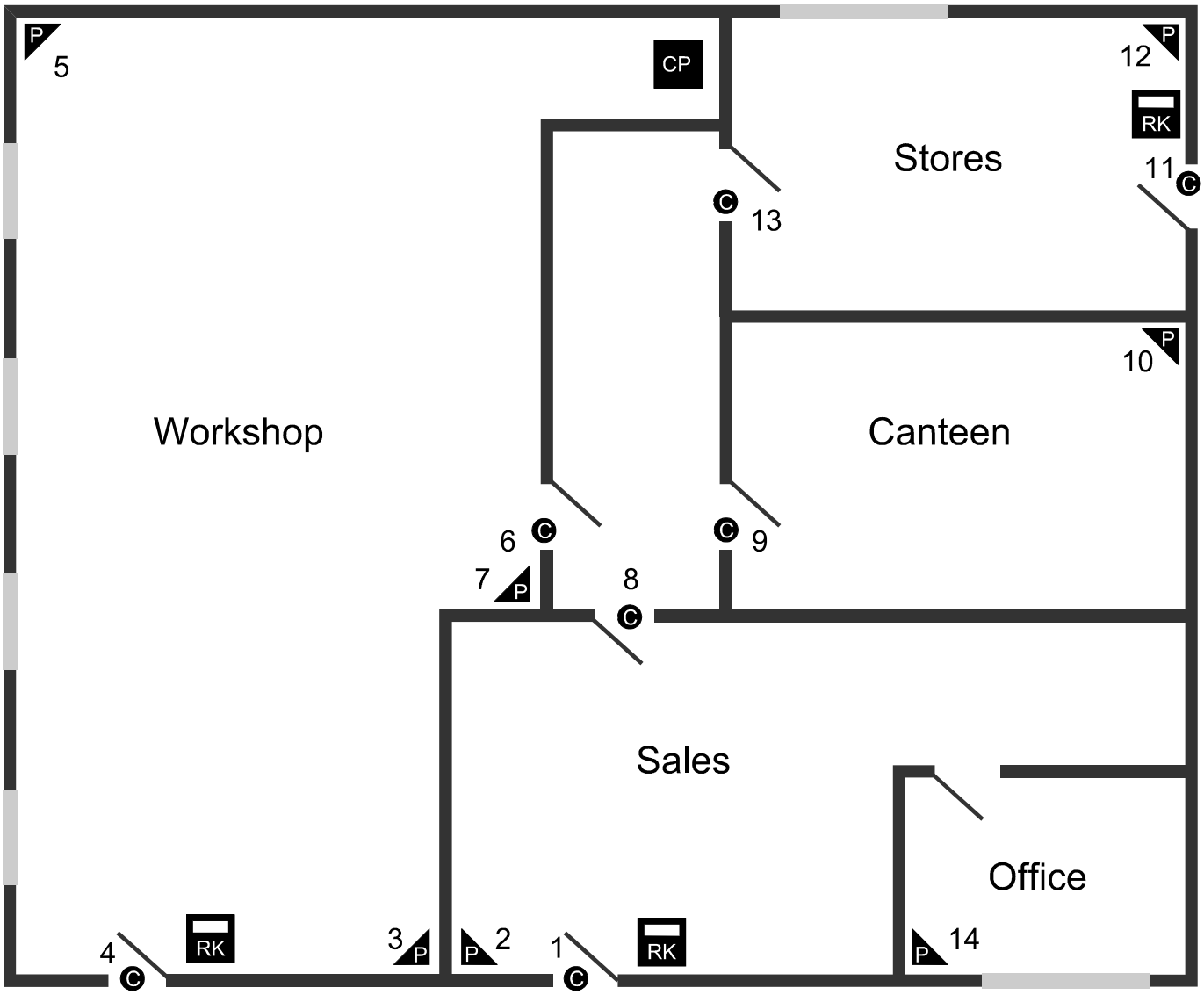
Circuit	Location	Ward A	Ward B	Ward C
01	Front Door	✔		
02	Smoke Detector			
03	Hall door to garage		✔	
04	Garage door	✔		
05	Garage back door	✔		
06	Kitchen door	✔		
07	Dinning room PIR		✔	
08	Lounge PIR		✔	
09	Bedroom 2 PIR			✔
10	Landing PIR			

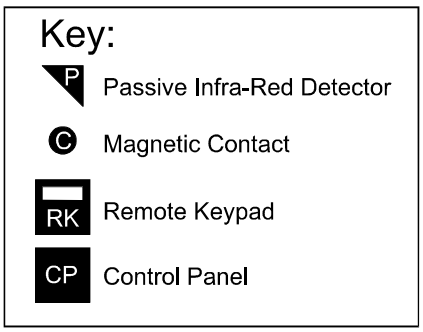
3. From the above Table assign circuits 01-10 to their relevant wards (see "Configure Wards" on page 41).
4. Program the part set groups, see "Part set Groups", on page 47. This ensures that when the user selects button A, B or C the system arms the correct wards. When using this method, the part set groups are programmed as follows:
   Part Set Group A: [AB]

   Part Set Group B: [ABC]

   Part Set Group C: [A]

   - *This method will only work correctly if circuits are assigned only to one ward. If a circuit is assigned to more than one ward, it will only be armed when all the wards its assigned to are set.*





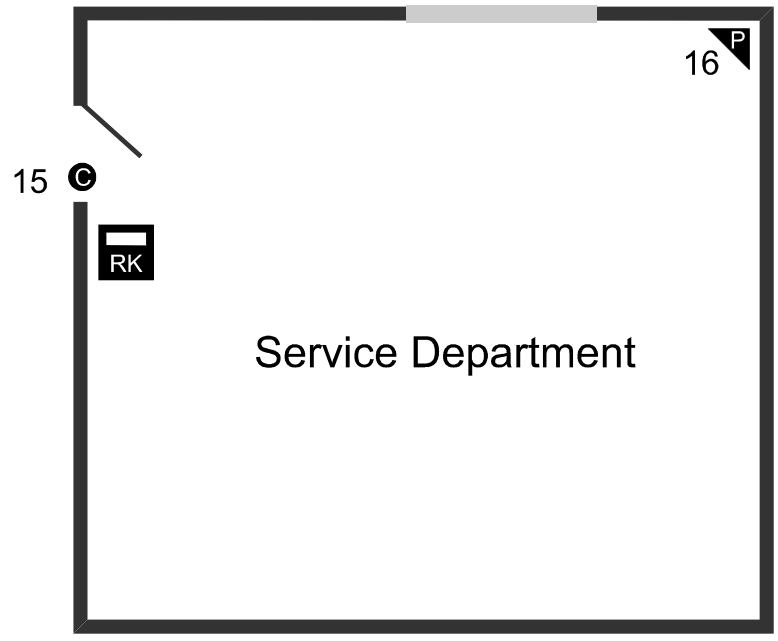


Figure 27. Commercial Premises

Commercial Part-Set Application

This application example shows how to use the "Code Set Groups" to set and unset different areas within a commercial premises. Using the drawing of the building the following is required:

- The Sales Manager requires independent access to the Sales department and the Canteen.
- The Workshop Manager requires independent access to the Workshop area and the Canteen.
- The Stores Manager requires independent access to the Stores area and the Canteen.
- The Service Manager requires independent access to the Service department.

1. From the above requirements assign each area to a ward, e.g.:

Ward A: Sales department and Canteen.

Ward B: Workshop and Canteen.

Ward C: Stores and Canteen.

System Ward: Service department.

2. Using the above ward requirements create a Table for assigning circuits to wards. Circuits with no ticks are assigned to the "System Ward":

Circuit	Location	Ward A	Ward B	Ward C
01	Sales Entrance Door	✔		
02	Sales PIR	✔		
03	Workshop PIR (1)		✔	
04	Workshop Entrance		✔	
05	Workshop PIR (2)		✔	
06	Workshop door		✔	
07	Workshop PIR (3)		✔	
08	Sales Internal Door	✔		
09	Canteen Door	✔	✔	✔
10	Canteen PIR	✔	✔	✔
11	Stores Entrance			✔
12	Stores PIR			✔
13	Stores Internal Door			✔
14	Sales (Office PIR)	✔		
15	Service Entrance			
16	Service PIR			

- ***The canteen door and PIR are assigned to wards A, B and C, this will ensure that they are only armed when all three wards are set. This allows access to the canteen when any of the wards A, B or C are unset.***

3. From the Table assign circuits 01-16 to their relevant wards *(see "Configure Wards" on page 41).*

4. *Program the code set groups (see "Code set Groups", on page 47).*This ensures that when the user enters their passcode the correct ward set or unsets. For this application example the code set groups are programmed as follows:
   Full Set Group: [S]

   Code Set Group A: [A]

   Code Set Group B: [B]

   Code Set Group C: [C]

5. Assign each "Code Set Group" with a passcode. For full details of programming the user passcodes refer to the User Manual.

Key Switch Application Example

This application example shows how to use the "Key Swich" circuit to fully set and part-set the system using a three position keyswitch. The Keyswitch is mounted in an electrical blanking plate together with an LED to indicate circuit faults when setting and part-setting the system.

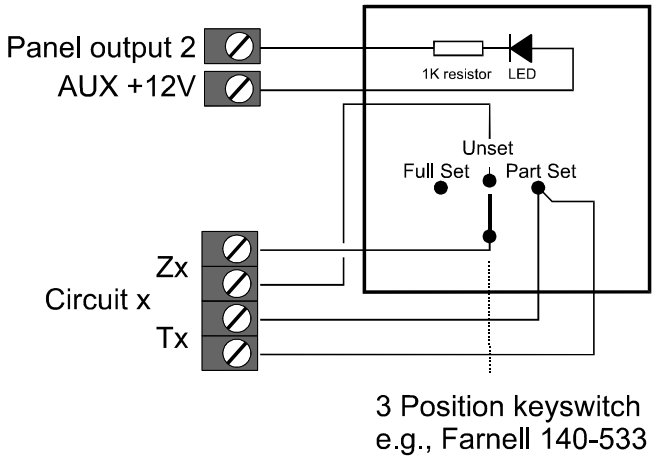


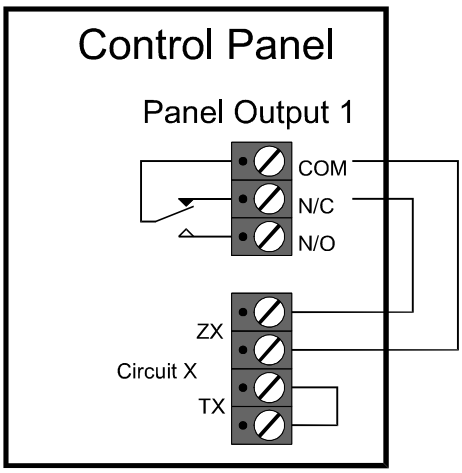
Figure 28. Key Point Wiring Details

1. Program the Detection Circuit as a "Key Switch" and set the attributes as "F * * * |* A * *". The "F" attribute indicates that the "Full Set Group" is selected when the keyswitch is switched from "Healthy" to "Active". The "A" attribute indicates that "Code Set Group A" is selected when the keyswitch is switched from "Healthy" to "Shorted".
2. Program the code set groups so that the correct combination of wards are set and unset. In this example the code set groups are set as follows:
   Full Set Group: [SABC]

   Code Set Group A: [AB]
3. Program panel output 2 as "General Fault" (044), this will provide a visual indication that one or more circuits are in error when setting the system.

Time Switch Application Example

This application example shows how to use "Time Switch A" and the "Key Point" circuit to set and unset the system. The time switch will be programmed so that panel is automatically set at 18:00 and unset at 08:00 from Monday to Friday, and will then remain set over the weekend.



Panel Output 1 is programmed as:
"Time Switch A" (040)

Circuit X is programmed as:
"Keypoint" with the attributes set as:
"F*** | ****".

Figure 29. Time Switch Wiring

1. Program the Detection Circuit as a "Key Point" and set the attributes as "F * * * |* * * *". The "F" attribute indicates that the "Full Set Group" is selected when the circuit changes from "Healthy" to "Active". *See "Program Circuits", on page 28).*
2. Program the code set groups so that all wards are set and unset for the "Full Set Group" *(see "Code set Groups", on page 47):*

Full Set Group: [SABC]

3. Program Panel Output 1 as "Time Switch A" (040), this is used to switch the "key Point" circuit from "Healthy" to "Active". *See "Panel Outputs", on page 25.*
4. Program "Time Switch A" as follows, *see "Time Switches", on page 46.*:

	Timer 1	Timer 2	Timer 3
On Time	18:00	00:00	00:00
Off Time	08:00	00:00	00:00
Mon	✔		
Tue	✔		
Wed	✔		
Thu	✔		
Fri	✔		
Sat			
Sun			

Alarm Abort & Confirmation

Both the TS790+ and TS900+ support "Alarm Abort" and "Sequential Confirmation". The alarm abort can be achieved by either sending an abort signal on a dedicated channel (normally channel 7) or by restoring the alarm channel.

Alarm Abort Operation

When the alarm is triggered the system transmits a Channel 3 (Alarm) to the central station. If the system is unset within the "Abort Delay" period the abort output is triggered and Channel 7 (Abort) is transmitted to the central station.

Sequential Confirmation Operation

When the first alarm is triggered, the system transmits Channel 3 (Alarm) to the central station. If a different zone is activated the system transmits Channel 7 (Confirmed Alarm).

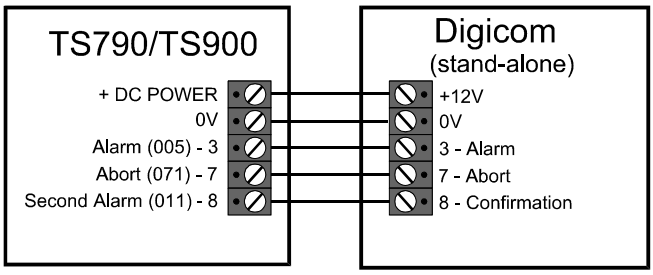


Figure 30. Alarm Abort & Sequential Confirmation

1. If a plug-on digicom is being used program the digicom channels as shown below, *see "Digicom Channels", on page 25.* If a stand-alone digicom is being used program the digicom outputs as shown below, see "Digicom Outputs", on page 25.

Channel No	Output Type
3	005 (Alarm)
7	071 (Abort)
8	011 (Second Alarm)

3. Program the "Abort Delay" timer to the required time (the default is 180 seconds), *see "System Timers", on page 30*.
4. Program the digicom channels so that they report the required signals.

Text Editing Keys

When programming any text the keys on the keypad function as shown below:

1 A	2 E	3 I
3 O	5 U	4 0 (zero)
7 Move cursor left	8 Change case	9 Move cursor right
ENT Accept text	0 Space	ESC Abandon text editing
A Up the alphabet	B Change cursor	C Down the alphabet

Figure 31. Text Editing Keys

Cursor Types

[^] This is the normal text editing cursor. Use the text editing keys as shown above.

[|] This is the number cursor. Use the numbered keys 0 - 9 to enter numeric data.

Common Key Sequences

Character	Key Sequence	Character	Key Sequence
A	1	U	5
B	1A	V	5A
C	1AA	W	5AA
D	2C	X	5AAA
E	2	Y	5AAAA
F	2A	Z	5AAAAA
G	2AA	:	1CCCCCCC
H	3C	;	1CCCCCC
I	3	<	1CCCCC
J	3A	=	1CCCC
K	3AA	>	1CCC
L	3AAA	?	1CC
M	4CC	@	1C
N	4C	!	0A
O	4	"	0AA
P	4A	#	0AAA
Q	4AA	$	0AAAA
R	4AAA	%	0AAAAA
S	5CC	&	0AAAAAA
T	5C		

Setup New Users

The TS790+/TS900+ allows up to 31 users to operate the alarm system, each user is assigned a user type and a passcode. User 01 is the master user which has a default setting of 5678.

User Types

The following user types are available:

Master

User 02-31 can be programmed as the type "Master". If the installation company has programmed the master user for full access, he or she will have access to all user menus and options. If the installation company has programmed the master user for limited access, he or she will NOT have access to "User menu 2" options 6 and 8, and all of "User menu 3".

Standard

Users 02-31 can be programmed as the type "Standard". This user type can only access "User menu 1".

Holiday

Users 02-31 can be programmed as the type "Holiday". This user type allows the alarm system to be set and unset, and access to ' User menu 1'. However, the passcode is automatically deleted from the system when a master user passcode is used to unset the alarm system. Normally the master user would assign this passcode type a temporary user whilst the they are away on holiday etc.

Set Only

Users 02-31 may be programmed as "Set Only". This user type allows the alarm system to be set and access to "User menu 1".

Reset Only
Users 02-31 may be programmed as "Reset Only". This user type allows 24hr alarms to be reset and access to "User menu 1" option 1 to 9.

Duress
Users 02-31 can be programmed as "Duress". When this user type is entered a silent "Panic Alarm" (i.e., Bell and sounders not triggered) is transmitted to the central station via the telephone line and remote signalling device (if fitted). The user will still be able to set and unset the alarm system and access "User menu 1".

- *All other user code types will generate a "Duress" alarm if the passcode is entered with the first two digits reversed (e.g., for a standard passcode of 2580 enter 5280 to generate a "Duress" alarm). If required, this feature can be disabled by the installation company or by making the first two digits of the passcode the same.*

PA Code
Users 02-31 can be programmed as "PA Code". When this user type is entered a "Panic Alarm"' is transmitted to the central station via the telephone line and remote signalling device (if fitted). The external sounder(s) and strobe light(s) are also activated.

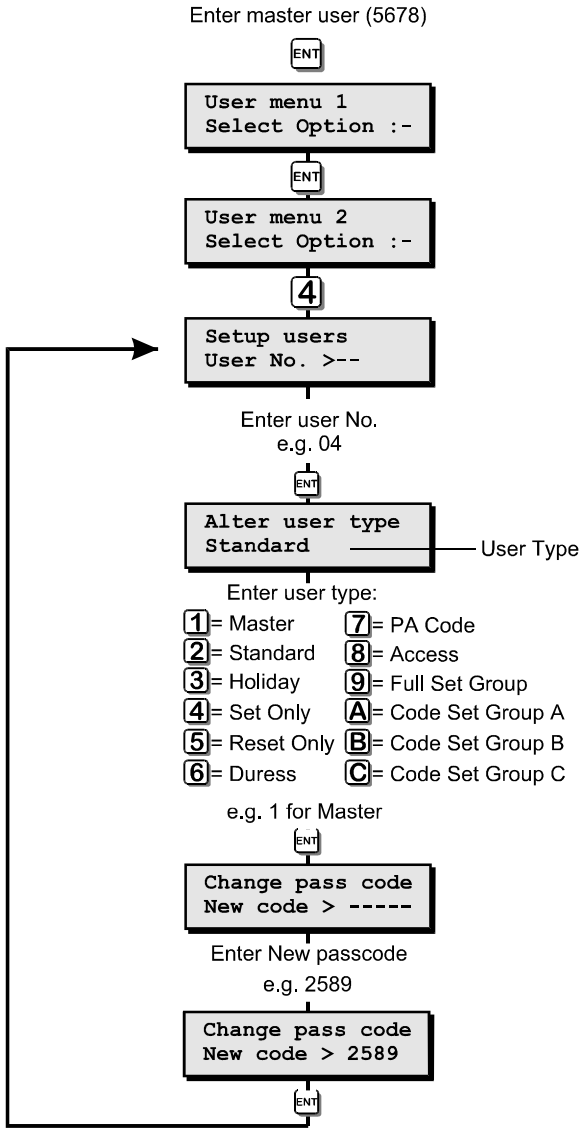
Access
Users 02-31 can be programmed as "Access". When this user type is entered any output that is programmed as ` Access' will activate for a pre-set time. Normally this user type is used in conjunction with an electric door strike connected to the alarm system so that when the passcode is entered the door strike is operated to allow the user access into that area.

Full Set Group
Users 02-31 may be programmed as "Full Set Group". This user type only allows the wards assigned by the installation company or master user to be set and unset. This user type does not have access to any user menus.

Code Set Group A
Users 02-31 can be programmed as "Code Set Group A". This user type only allows the wards assigned by the installation company or master user to be set and unset. This user type does not have access to any user menus.

Code Set Group B
Users 02-31 can be programmed as "Code Set Group B". This user type only allows the wards assigned by the installation company or master user to be set and unset. This user type does not have access to any user menus.

Code Set Group C
Users 02-31 can be programmed as "Code Set Group C". This user type only allows the wards assigned by the installation company or master user to be set and unset. This user type does not have access to any user menus.



Setup New Users Flowchart

Quick Reference Engineers Menus

Engineers Menu 1

key	Options	Page
1	**Program Panel Outputs** 1 = Panel Output 1 (relay) 2 = Panel Output 2 (-ve) 3 = Panel Output 3 (+ve)	25
2	**Program Digicom Outputs** 1 = Channel 1 5 = Channel 5 2 = Channel 2 6 = Channel 6 3 = Channel 3 7 = Channel 7 4 = Channel 4 8 = Channel 8	25
3	**Program Digicom Channels** 1 = Channel 1 5 = Channel 5 2 = Channel 2 6 = Channel 6 3 = Channel 3 7 = Channel 7 4 = Channel 4 8 = Channel 8	25
4	**Program Circuits & Attributes** **Circuit Types** **Circuit Attributes** 0 = Not Used 1 = Access 1 = Night 2 = D Knock 2 = 24 Hour 3 = Test 3 = PA Silent 4 = Omit 4 = PA Audible 5 = Reset 5 = Fire 6 = Flagged 6 = Auxiliary 7 = Entry 7 = Final Exit 8 = Chime 8 = Exit Term. **Keyswitch Attributes** 9 = Keyswitch F, A, B, C = wards A = PSU - Battery L = Lockset B = PSU - Fuse M = Momentary C = PSU - Power I = Inverted	28
5	**System Timers** 00 = Test Call At 15 = Acc. Code Dur. 01 = No Rearms 16 = Modem Rings 02 = Settle Time 17 = C.I.D Alarms 03 = Pset Com Dly 18 = Ward Menu Dur. 04 = Exit time 19 = Test Call 05 = Entry Time 20 = Confirmation Time 06 = Bell Dur. 21 = P.Set Codes 07 = Bell Dly 22 = Line Fault Dly 08 = Double Knock 23 = AC Off Delay 09 = Test Time 24 = No. Rem Resets 10 = 2nd Entry 25 = Monitor Dur. 11 = Service Time 26 = Activity Dur. 12 = Payment Time 27 = P.Set Entry 13 = PSet Bell Delay 28 = Abort Delay 14 = Courtesy Dur	30
6	**Setting Modes** 0 = Full Set 1 = Final Exit A = Part Set A 2 = Exit Terminator B = Part Set B 3 = Timed Exit C = Part Set C 4 = Instant 5 = Deferred 6 = Lockset	33
7	**System Printout**	34
8	**Remote Reset Algorithm** Enter Algorithm number 004 - 199.	34

key	Options	Page
9	**System Configuration** **No. Yes No** 00 = Bell is an SAB Bell is an SCB 01 = User 1 Limited User 1 Unlimited 02 = Fire Signals All Fire Signals Set 03 = Silent 24hr Ccts Audible 24hr Ccts 04 = Enable Duress Disable Duress 05 = PA Silent PA Audible 06 = Set with LF Can't Set with LF 07 = User Reset Engineer Reset 08 = Tamp. User. Reset Tamp. Eng Reset 09 = Hi-Sec Engineer Lo-Sec Engineer 10 = OMs Minic OMs alarms 11 = Do Battery Test No Battery Test 12 = F.Exit Is Night F.Exit is Normal 13 = Audible T.Swicth Silent T.Switch 14 = Show P.Set Info Show Time Only 15 = Ans Phone defeat. Normal Answer 16 = Set with AC Off No Set with AC Off 17 = Loud Chime Normal Chime 18 = Invert O/P 1 Normal O/P 1 19 = Invert Digi O/Ps Normal Digi O/Ps 20 = Online Keypad No Online Keypad 21 = Restore PID PID Alarms Only 22 = User Authorised No Authorisation 23 = Mimic Alm & Flt Mimic Alarm Only 24 = Sndrs on Confirm Sndr on first alarm 25 = Bell on Confirm Bell on first alarm 26 = Confirm after Entry No conf after Entry 27 = Entry conf after 2 cct After 1 cct 28 = Confirmation on Confirmation off 29 = Entry kpd locked Entry kpd free 30 = Tamp as burg Tamp as tamp 31 = Unconf Usr Rst Unconf Eng Reset 32 = Keypad PA On Keypad PA Off	34
0	**Go To User Menu 1** 1 = Bell Test 2 = Walk Test 3 = Remote Reset 4 = Change Passcode 5 = Enable Chime 6 = Omit 24hr Group 7 = Omit Circuits 8 = Silent Set 9 = View Activity Count 0 = Full Set A = Part Set A B = Part Set B C = Part Set C	37
B	**View Location Text**	38
C	**Relearn**	38

Quick Reference Engineers Menus

Engineers Menu 2

key	Options	Page
1	**View Circuits** A = Scroll Next Circuit C = Scroll Previous Circuit	40
2	**Set System Time** Enter time e.g. 1400 for 2.00pm	40
3	**Set System Date** Enter date e.g. 2804 for 28 April	40
4	**Change Passcode (Engineers)** Enter new passcode	40
5	**Chime Circuits** A = Scroll Next Circuit B = Toggle Chime / Silent C = Scroll Previous Circuit	41
6	**Alter 24Hr Group** A = Scroll Next Circuit B = Toggle Armed / Omitted C = Scroll Previous Circuit	41
7	**Print System Log** Enter Number of events and press ENT	41
8	**Configure Wards** Enter Circuit Number then press A = Ward A B = Ward B C = Ward C	41
9	**View System Log** A = Scroll Backwards B = Toggle Name / Circuit Text C = Scroll Forwards	42
0	**Reset User Code 1** Press ENT to Reset User 1 to 5678	44
A	**Start Call Back** 1 = Call Back No. 1 2 = Call Back No. 2 3 = Call Back No. 3 ENT to start Call Back	44

Engineers Menu 3

key	Options	Page
1	**Time Switches** A = Time Switch A 1 = On Time 1 B = Time Switch B 2 = On Time 2 C = Time Switch C 3 = On Time 3 4 = Off Time 1 7 = 1st operates on 5 = Off Time 2 8 = 2nd operates on 6 = Off Time 3 9 = 3rd operates on 0 = Manually Switch Output	46
2	**Part Set Groups** Enter Group: Select Wards: A = Part Set Group A O = Ward S B = Part Set Group B A = Ward A C = Part Set Group C B = Ward B C = Ward C	47
3	**Code Set Groups** Enter Group: Select Wards: A = Part Set Group A O = Ward S B = Part Set Group B A = Ward A C = Part Set Group C B = Ward B 0 = Full Set Group C = Ward C	47
4	**Engineers Name** Use Keyboard to enter text	48
5	**Part Set Text** Enter Group: A = Part Set Group A B = Part Set Group B C = Part Set Group C Use Keyboard to enter text	48
6	**Circuit Text** A = Scroll Next Circuit B = Edit Text C = Scroll Previous Circuit	48
7	**Custom Text Menu** 1 = Reset Message 2 = Banner Message 3 = Location Text 4 =Printer Header 5 = Part Set Banner	48
8	**XNode Outputs** Enter Node Output No. 0 - 9 then enter type	49
9	**Built In Tests** 1 = System Current 2 = System Voltage 3 = Circuit Resistance 4 = Digi Test	49
0	**View Activity Count**	50
A	**Custom Output A**	51
B	**Custom Output B**	51
C	**Modem Options** 1 = Call back No 1 4 = Modem password 2 = Call back No 2 5 = Modem Site No 3 = Call back No 3 6 = Program Digicom 0 = Reset Digicom	52

Quick Reference Engineers Menus

Programmable Output Types

No.	Output Type
000	Bell On
001	Strobe On
002	Switch 12V
003	Detector Reset
004	Walk Test
005	Alarm
006	P.A.
007	Fire
008	System Set
009	Code Accepted
010	24 Hour
011	Confirmed Alarm
012	Courtesy Light
013	Engr On Site
014	Ccts Omitted
015	Auxiliary
016	Ward A Armed
017	Ward B Armed
018	Ward C Armed
019	Ward S Armed
020	Tamper Fault
021	Line Fault
022	Mains Off
023	Exit / Entry
024	Test Fail
025	First Knock
026	Comms Failed
027	Comms Success
028	Comms Active
029	2nd Entry
030	Entry
031	Exit
032	Ward A Set Fail
033	Ward B Set Fail
034	Ward C Set Fail
035	Ward S Set Fail
036	Ward A Alarm
037	Ward B Alarm
038	Ward C Alarm
039	Ward S Alarm
040	Time Switch A
041	Time Switch B
042	Time Switch C
043	Access Code
044	General Fault
045	Battery Test
046	Service Call
047	System Full Set
048	Custom O/P A
049	Custom O/P B
050	PC output 1
051	PC output 2
052	Sounder Control
053	Service Required
054	Call Engineer
055	Never Active
056	Duress
057	System Part-Set
058	Battery Fault
059	Set Fail

Programmable Output Types

No.	Output Type
060	Open/Close
061	ID Alarm
062	Random
063	Modem lockout
064	Sndr Control A
065	Sndr Control B
066	Sndr Control C
067	Sndr Control S
068	Chime
069	24hr Ccts Omit
070	Timed Output
071	Abort
072	Strobe on Set A
073	Strobe on Set B
074	Strobe on Set C
075	Strobe on Set (System)
076	Alarm Confirm Ward A
077	Alarm Confirm Ward B
078	Alarm Confrim Ward C
079	Alarm Confirm (System)
080	Active Omit
080	Keyswitch Disabled
100-155	Circuit Mimics 01-56
200-255	Circuit Alarms 01-56

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